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Content Area Language and Literacy

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An OTB edited by Saadia Ali
and Margaret A. Berg

Contents

Dedication and Thanks

I want to extend my sincere gratitude to all the authors who contributed chapters to this groundbreaking open education textbook on Content Area Language and Literacy.

Your expertise and dedication to sharing knowledge freely for the benefit of students and educators worldwide exemplifies the spirit of open education. By generously donating your time and insights to create an accessible, high-quality resource, you are helping to advance equity, collaboration, and functional language development in the field. This collaborative work would not have been possible without each of you.

Thank you for being part of this project to empower learners from all backgrounds. The impact of open textbooks like this will be felt for years to come.

--Saadia Ali

My thanks are given in the Conclusion of the Introduction chapter. --Margaret A. Berg

Introduction and Overview of the Open Textbook

Margaret A. Berg and Saadia Ali

This Open Textbook (OTB) arises from a place of humility and the need for inclusion. In 2020, my colleagues and I were given a mandate to attend a Colorado Department of Education online training for "literacy" that rehashed the same research and instructional strategies provided to me (Berg) when I studied for my doctorate in Curriculum and Teaching with a focus on Literacy and Linguistics. Most distressing to me was the fact that no attention was given in the state training for the inclusion of children who did not speak English in the home. Meanwhile, I have raised a child who speaks both English and Russian in the home with the schooling context providing the addition of Spanish to her repertoire of languages. I found myself angry that we were administratively forced to sit through training for monolingualism.

The materials for teaching monolingual English speakers abound in the US for historical reasons, foremost because of the active destruction of our heritage bilingual schools during the "Americanization" movement of the "great wars" era (Ramsey, 2010). As the training progressed, a rich discussion emerged with my colleague Saadia who enjoyed much of the material provided by the state. Saadia had a more accepting attitude toward the training and asserted that any idea which can be used in teaching is beneficial even if it is presented in a deluge of information that is otherwise known or useless. Her words cooled my anger and humbled me to recognize, once again, the variety of perspectives that exist at our university and in our state.

Saadia has since moved on to a bigger institution to expand her educational knowledge to technology and design, but this OTB represents one result of those conversations that began with the state mandated training. The first two chapters of the textbook are the synthesis of much of the state's workshop about the Simple View of Reading and instructional strategies to support it. Most of the material merges their instructional ideas with the verbiage of an Open Educational Resource text (Munger, 2016). As multilinguals who are raising multilinguals, dubious ideas from the state materials are either brought into question or were eliminated completely. For example, my daughter is a Russian speaker and Elkonin Boxes allow children in Russia to see and slide each sound of a word (represented by a single symbol in the language) into a box situated in a schoolbook. In English, it makes

more sense to simply slide chips for sounds without boxes since several spelling patterns in English lack direct sound to symbol correspondences. (Consider how the long "a" sound is represented in these four words: pain, mane, vein, and reign. Yet all four contain only three phonemes with different initial sounds but similar rhymes with a long "a" followed by an "n".) English often lacks the phonetic transparency required for the Elkonin Box that implies a one symbol and one sound correspondence, so it makes little sense to force upon children a pedagogical approach that comes from a culture and language that has that one-to-one advantage. But the attack on educators since the Reagan Administration era's *A Nation at Risk* (1983) publication has been unrelenting and has resulted in an acute teacher shortage; therefore, if an individual is entering a classroom with very little knowledge about world languages and they are expected to teach young children, they may need some of the ideas presented in the first two chapters of this book.

The Simple View of Reading theorizes two strands of cognition, with several smaller strands or skills, that must twist together for a child to read well. The "Word Recognition" strand consists of (a) phonological awareness, (b) decoding, and (c) sight word recognition. The "Language Comprehension" strand includes (a) background knowledge, (b) vocabulary, (c) language structures, (d) verbal reasoning, and (e) literacy knowledge. These two stands are explained in **Chapters 1 and 2** respectively. We then turn attention to the reality of the increasing linguistically diverse children in schools and the imperative to immerse them in the language of various curricular content supporting them instructionally for success. This focus on the return to, and growth of, multilingualism is informed by the 2020 WIDA Standards framework that is anchored by four Big Ideas: 1) Equity of Opportunity and Access, 2.) Integration of Content and Language, 3.) Collaboration among Stakeholders, and 4.) A Functional Approach to Language Development. These ideas are not exclusive and separate but rather are integrative, overlapping, and complementary as the various chapters that make up the rest of the book demonstrate. Although the chapters emphasize the secondary levels of schooling, the techniques discussed can be employed at lower levels of education and the final two chapters extend considerations for Multilingual Learners into higher education.

In **Chapter 3**, Rachel Beckwith argues that middle school is the period in which students transition from a simple recount genre, that emphasis a chronological order of events, to much more complex narratives. She provides examples of recounts and narratives challenging the reader to consider the nuances of each and how one builds upon or

complements the other in an English Language Arts curriculum. Since students come to classes with varied experiences, she asserts that they must be exposed to many examples of each genre before they are expected to write them. She also emphasizes the need for extensive work at the sentence structure level so that students can add greater variety to their stories to achieve their intended functions and purposes.

In **Chapter 4**, Gui and de Oliveira delineate the 6Cs of their Language-based Approach to Content Instruction (LACI) and use it to provide greater scaffolding to multilingual learners during the Teaching Learning Cycle, an older approach that is an outgrowth of the Sydney School's research project *Learning to Write, Reading to Learn* (Rose and Martin, 2012) based in M.A.K. Halliday's Functional Linguistics (2004). The authors provide an example scaffolded lesson on Birthright Citizenship from a Civics program from the New York City school system where 42% of the students speak a language other than English in their homes. The 6Cs that educators are to consider and integrate into planning are Connection, Culture, Code-breaking, Challenge, Community/Collaboration, and Classroom Interactions.

In **Chapter 5**, Terrell et al. bring together several frameworks—including the Organisation for Economic Cooperation and Development's PISA exam's competencies for scientific literacy, the Next Generation Science Standards, and WIDA standards—to contextualize the importance of argument in the science curriculum. They then take a science lesson on sound from the state of Virginia and make alterations to it to better support multilingual and culturally diverse learners. They employ LACI's Teaching-Learning Cycle with ideas on how to develop language objectives that will be realized in a lesson. Common instructional practices like anchor charts are integrated, for example, a CER—Claim, Evidence, and Reasoning—visual helps keep the students focused on the genre of argument as students gather scientific evidence.

In **Chapter 6**, Slater and Beckett provide two instructional units for Project-based Learning that employ Mohan's Knowledge Framework to assist students in recognizing how language conveys ideas as they explore "truth in advertising." They introduce Appraisal Theory that assists in identifying the stance of a speaker or writer about the topics they are presenting. These ideas bolster Critical Thinking (CT) skills that are emphasized in the frameworks of TESOL and WIDA among other professional pedagogical organizations. The

chapter provides instructional ideas for teachers to incorporate CT with Project-based Learning.

In **Chapter 7**, Faika Tahir draws on the WIDA ideas of equity, collaboration, and equal access to make an argument for the use of AI to assist students in their writing for academia. She briefly outlines the controversy surrounding the Generative AI writing platforms, the need to motivate students with Social Justice ideas for writing, the Expectancy-Value-Cost Model of Motivation, and the imperative to move away from summative writings to smaller formative assessments of writing. She pushes the readers to think beyond the secondary level and envisions Higher Education that more fully supports and accommodates multilingual learners.

In **Chapter 8**, Saadia Ali draws on the ninth Guiding Principle of the 2020 WIDA Standards Framework to explain the construct of "translanguaging" used in that Principle. She openly draws on the tool of Generative AI to assist in the construction of the chapter that expounds a definition of translanguaging, trends in the practice, benefits of translanguaging, advantages of multilingualism, and challenges to translanguaging practice for multilinguals. She ends with advocacy for translanguaging and provides an appendix with instructional ideas and videos to assist teachers. Saadia also ends this introductory chapter with the significance of translanguaging in her own development as a scholar

Saadia's Passion for Languages

My inspiration for languages started in my childhood when I used to see my father reading the Holy Quran in three different languages, Arabic, Urdu, and English, in a special version where the Arabic language was written on the right side, Urdu in the middle, and English on the left side. Using Persian couplets in his literary discussions with his friends and talking to his siblings in Saraiki (a regional dialect of Punjabi), I used to get fascinated. I wondered how we could become fluent and understand different languages simultaneously. As time passed, my passion for languages increased, and I started noticing multilingual speakers, their pronunciation, and their fluency in family, friends, and community.

As a native Urdu speaker, I had the privilege to get exposed to other languages. Urdu and English are Pakistan's official languages. Therefore, I am equally fluent in English, Punjabi (a regional dialect used by speakers in Pakistan and India), and Hindi. My parents speak Urdu, English, and Punjabi. As an elective course, I studied Arabic for three years in middle school and Persian for two years as an undergraduate and graduate student. I also learned

introductory phrases in Korean and Spanish when I moved to a larger city in 2007 to greet the immigrant salespersons in their native languages. The level of motivation would increase tremendously in dealing with a customer using their native languages, and I could see a glow on their faces as well.

As soon as I started my Master in English and Literature at the National University of Modern Languages (N.U.M.L.) in Islamabad, Pakistan, I was introduced to Phonetics and Phonology, History of Linguistics, and Teaching English as a Foreign Language coursework. These courses ignited the flame of languages and looking at language, particularly syntax and semantics, with a new lens. Moving forward in the program, the studies and hands-on approaches in semantics, syntax, and stylistics added a bit more flavor to my language learning and code-switching experimentation.

Love for Translanguaging

The idea of empowering multilingual learners in classrooms through translanguaging began during the Master of Science program at Southern Connecticut State University, where I completed a capstone study on translanguaging in the Fall of 2017. I went on to teach ESL classes utilizing translanguaging techniques at Islamic centers in Connecticut in 2018 and in Colorado from 2019 through 2020. Between 2015 and 2018, I implemented translanguaging practices in Intensive English Programs at E.L.S. West Haven, Connecticut, and the University of Northern Colorado's of International Education Center, seeking guidelines and ideas from NYSIEB Educator's Translanguaging Practices (CUNY, 2011). I was fascinated to see how languages, especially native languages, bring spark and excitement in the eyes of my undergraduate immigrant English Language Learners (ELLs) at E.L.S., West Haven. At the same time, when I started to use and apply various strategies of Translanguaging practices acquired from CUNY NYSIEB Educator's Translanguaging in the Intensive English Programs, I saw a sudden shift in learning from least interested students to thriving students.

When my students tried to use their native languages during my English-intensive language classrooms, sometimes I would pick up the meaning of their spoken words, especially if I had known some phrases or words of their languages. They used to get excited and scared simultaneously to learn that their English teacher knew a few words from their native languages. I used to ask them to teach me some words in every class from their native languages, which regularly aligned with the class's objectives. It started reducing their anxiety

and fear of learning English as a Second Language (ESL) and motivated and empowered them to teach me the words from their native languages.

I started memorizing songs in their native languages or a few couplets from the songs to show association and correlation to their culture in the ESL classes. I also used to pay special attention to the content and language objectives to make the content understandable for them with cultural connections. They slowly and steadily showed better and increased participation in class discussions and activities. The learning outcomes of each class were met in a smooth and enjoyable environment. This response motivated me to the extent possible that I coordinated and implemented ESL programs in two Islamic centers and experienced a tremendous shift of anxiety and fear to confidence, motivation, and empowerment in adult English Language Learners (ELLs).

Urdu and my Homeland

Pakistan is my homeland country, and Urdu is Pakistan's native language. As I go deeper into my understanding of WIDA and the Teaching-Learning Cycle, my language background informs my ideas. My language journey started with Urdu.

> "Urdu is an Indo-Aryan language and the official language of Pakistan. It is very similar to Hindi, with the main differences being that Urdu borrows vocabulary from Persian, Arabic (and English) while Hindi uses more words from Sanskrit. Linguists see Standard Urdu and Standard Hindi as two formal versions of the same Hindustani language. Urdu and Hindi are virtually identical in informal spoken settings and can be considered dialects of one language. In addition to being widely used in Pakistan and India, Urdu is also spoken by communities in Afghanistan, Bahrain, Bangladesh, Botswana, Fiji, Germany, Guyana, Malawi, Mauritius, Nepal, Norway, Oman, Qatar, Saudi Arabia, South Africa, Thailand, the United Arab Emirates, the United Kingdom, and Zambia. Urdu has been written in a Perso-Arabic script since the 12th century, usually in a calligraphic style called Nastaliq. The word Urdu 'derived' from the Turkish word meaning 'foreign'" (UNESCO paras 1-3).

The intersections of language in my own identity are as diverse and unique as the students who enter the classrooms where I have taught and will teach.

I am pursuing a doctoral degree in Instructional Design and Technology at Virginia Tech. I am motivated to add a flavor of translanguaging practices directly or indirectly in my teaching and learning assignments. It feels uplifting to use it in my social contexts and

communication within the academic and professional community of educational professionals and researchers to bring everyone together. The participants involved in the discussion proudly share funds of knowledge and immense resources from their ethnic backgrounds, native languages, and traditional foods and festivities.

Most recently, I conducted qualitative research on culturally responsive teaching through translanguaging with ESL students in Virginia. I presented findings from this 2022 study at a graduate research competition in Spring 2023. I continue participating in professional development on translanguaging through the U.S Department of Education while submitting conference proposals to share my work. My commitment to expanding translanguaging research, refining instructional techniques, and advocating for multilingual learners remains strong.

Sharing my passion for Translanguaging with the readers is essential. You need to use the lens of a linguistic, multilingual researcher and learner to feel the direct and deep connection between the native language and its user. Once that lens is set to target the communication barriers and gaps in learning, the overarching learning and content objectives can be met in an enjoyable setting.

Conclusion

Saadia's love of knowledge cannot be denied and I want to thank her for allowing me an opportunity to come to know her through this process. Even after losing potential contributors and our third editor, Saadia held on to the dream that we could develop an Open Educational Resource Textbook (OTB) that we could share with students and scholars who may not have access to materials that are low cost and aligned with the Big Ideas of WIDA. It has been a humbling, and at times harrowing, experience but here we are at the end/beginning of the first edition. I would also like to add my own thanks to Saadia's that appears earlier in this book. I want to thank our colleagues throughout the United States who willingly peer-reviewed chapters the designated chapters in this book. Thank you again to the contributing authors; may the contents of this OTB be read, recycled, revised, remixed, and redistributed across contexts throughout the world as needed. Everyone deserves an education.

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Chapter 1

Word Recognition and the Simple View of Reading*

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Objectives: Educators will be able to…

- Recognize the two strands in the Simple View of Reading.
- Understand the Word Recognition elements in the Simple View of Reading.
- Gain instructional ideas for supporting young learners in learning to read an alphabetic language, i.e. English.

Introduction

The Simple View of Reading is a model, or a representation, of how skillful reading comprehension develops. Although the Report of the National Reading Panel (NRP; NICHHD, 2000) concluded that reading instruction should incorporate explicit instruction in five areas (phonemic awareness, phonics, fluency, vocabulary, and comprehension), the Simple View of Reading shows how these subskills are intertwined to ultimately contribute to skillful reading and the importance of background knowledge for increased comprehension. Although the Comprehension and Vocabulary chapter focuses predominately on these two areas along with some mention of fluency for use in the arts-based activities, this first chapter focuses on the skills that should be, and need to be, acquired by children in the earliest years of education—phonemic awareness and phonics. It is important to note that phonics, or letter-sound correspondence in written language, is most applicable in phonetic based written language systems like English, Spanish, Russian, etc. Furthermore, it is worth noting that the NRP meta-analysis research employed English instruction as its base ideology and population. Little to no attention was given in the NRP research to multilingual students, particularly those emerging from an oral language into a written languages in other systems other than phonetic like Chinese. Most students enter schools with a rich oral language store

* Editors' note: This chapter was blind peer-reviewed prior to online publication.

of vocabulary, stories, and experiences though not all these language encounters are of use within the school setting. The ability to read words begins the journey of what has been recorded by literate people of previous generations, and what is missing or absent, an issue that the emergent reader/writer may seek to set right. This journey begins by taking the spoken sounds swirling in an environment and learning to capture them in a system of symbols, and for the purposes of this chapter, the written system of English is the focus.

Word recognition, or the ability to read words accurately and automatically, is a complex, multifaced process. Reading comprehension is defined as "the process of simultaneously extracting and constructing meaning through interaction and involvement with written language" (Snow, 2002, p. xiii), as well as the "capacities, abilities, knowledge, and experiences" one brings to the reading situation (p. 11). The Simple View of Reading (Gough & Tunmer, 1986) is a research-supported representation of how reading comprehension develops. It characterizes skillful reading comprehension as a combination of two separate but equally important components—word recognition skills and language comprehension ability. This idea is illustrated in a visual model that was created by Dr. Hollist Scarborough (2001, see Figure 1).

Figure 1: Scarborough's Reading Rope

As this model implies, students who have success with reading comprehension are those who are skilled in both word recognition and language comprehension. In the lower strand of the image, "Word Recognition" is composed of three elements: Phonological Awareness, the recognition and manipulation of sounds in spoken language; Decoding, the task of gaining a sound from a written symbol or symbols; and Sight Recognition of familiar and high frequency words that may not follow a common phonemic pattern (for example, "said" has a short /e/ sound while a broader pattern in English provides a long /a/ sound for the a-I combination—paid, maid, braid, etc.) This chapter will focus on this lower strand though not exclusively since a student's background knowledge impacts their experiences in, and beyond, the school. The comprehension of written texts requires two essentials—being able to read the words on the page and understanding what the words and language mean. If a student cannot recognize words on the page accurately and automatically, fluency may be

affected, and in turn, reading comprehension will suffer. Likewise, if a student has poor understanding of the meaning of the words, reading comprehension will suffer.

Historically, it was thought that since children learn language and how to speak just by virtue of being spoken to, reading to and with children should naturally lead to learning to read, or recognize, words. Now we know it is not natural, even though it seems that some children "pick up reading" like a bird learns to fly. The human brain is wired from birth for speech, but this is not the case for reading the printed word. This is because what we read—our alphabetic script—is an invention, only available to humankind for the last 3,800 years (Dehaene, 2009). As a result, our brains have had to accommodate a new pathway to translate the squiggles that are our letters into the sounds of our spoken words that they symbolize. This seemingly simple task is, in actuality, a complex feat. The alphabet is an amazing invention that allows us to represent both old and new words and ideas with just a few symbols. Despite its efficiency and simplicity, the alphabet is also a root cause of reading difficulties for many people. The letters that make up our alphabet represent phonemes—individual speech sounds—or according to Dehaene, "atoms" of spoken words (as opposed to other scripts like Arabic whereby the written symbols represent larger units of speech such as syllables or whole words). Individual speech sounds in spoken words (phonemes) are difficult to notice for approximately 25% to 40% of children (Adams, Foorman, Lundberg, & Beeler, 1998). In fact, for some children, the ability to notice, or become aware of the individual sounds in words (phoneme awareness) proves to be one of the most difficult academic tasks they will ever encounter. If we were to ask, "How many sounds do you hear when I say 'gum'?" some children may answer that they hear only one, because when we say the word "gum," the sounds of /g/ /u/ and /m/ are seamless. (Note the / / marks denote the sound made by a letter.) This means that the sounds are coarticulated; they overlap and melt into each other, forming an enveloped, single unit—the spoken word "gum." There are no crisp boundaries between the sounds when we say the word "gum." The /g/ sound folds into the /u/ sound, which then folds into the /m/ sound, with no breaks in between.

Our speech consists of whole words, but we write those words by breaking them down into their phonemes and representing each phoneme with letters. To read and write using our alphabetic script, children must first be able to notice and disconnect each of the sounds in spoken words. They must blend the individual sounds together to make a whole word (read). And they must segment the individual sounds to represent each with alphabetic

letters (spell and write). This is the first stumbling block for so many in their literacy journeys—a difficulty in phoneme awareness simply because their brains happen to be wired in such a way as to make the sounds hard to notice. Research, through the use of brain imaging and various experiments, has shown how the brain must "teach itself" to accommodate this alphabet by creating a pathway between multiple areas (Dehaene, 2009). Instruction incorporating phoneme awareness is likely to facilitate successful reading (Adams et al., 1998; Snow, Burns, & Griffin, 1998), and it is for this reason that it is a focus in early school experiences. For some children, phoneme awareness, along with exposure to additional fundamentals, such as how to hold a book, the concept of a word or sentence, or knowledge of the alphabet, may be learned before formal schooling begins. In addition to having such print experiences, oral experiences such as being talked to and read to within a literacy rich environment help to set the stage for reading. Children lacking these literacy experiences prior to starting school must rely heavily on their teachers to provide them.

Simple View of Reading, as illustrated by Scarborough (see Figure 1), represents the underlying skills and elements that come together to form two necessary braids of reading comprehension. Although the model itself is called "simple" because it points out that reading comprehension is comprised of reading words and understanding the language of the words, in truth the two components are quite complex. For either of the two essential components to develop successfully, students need to be taught the elements necessary for automatic word recognition (i.e., phonological awareness, decoding, sight recognition of frequent/familiar words), and strategic language comprehension (i.e., background knowledge, vocabulary, verbal reasoning, literacy knowledge, etc.). The sections below will describe the importance of the three elements that lead to accurate word recognition and provide some instructional methods for each element.

Word Recognition

Word recognition is the act of seeing a word and recognizing its pronunciation immediately and without any conscious effort. If reading words requires conscious, effortful decoding, little attention is left for comprehension of a text to occur. Since reading comprehension is an important goal in teaching children to read, a critical early objective is to ensure that they can read words with instant, automatic recognition (Garnett, 2011).

Consider your own reading as an example of automatic word recognition. Assuming you are a skilled reader, it is likely that as you are looking at the words on this page, you cannot avoid reading them. It is impossible to suppress reading the words that you look at on a page. Because you have learned to instantly recognize so many words to the point of automaticity, a mere glance with no conscious effort is all it takes for word recognition to take place. Despite this word recognition that results from a mere glance at print, it is critical to understand that you have not simply recognized what the words look like as wholes, or familiar shapes. Even though we read so many words automatically and instantaneously, our brains still process every letter in the words subconsciously. This is evident when we spot misspellings. For example, when quickly glancing at the words in the familiar sentences, "Jack be nimble, Jack be quick. Jack jamped over the canbleslick," you likely spotted a problem with a few of the individual letters. Yes, you instantly recognized the words, yet at the same time you noticed the individual letters within the words that are not correct. To teach students word recognition so that they can achieve this automaticity, students require instruction in phonological awareness, decoding, and sight recognition of high frequency words (e.g., "said," "put"). Each of these elements is defined and their importance is described below, along with effective methods of instruction for each.

Phonological Awareness

Phonological awareness is a broad term encompassing an awareness of various-sized units of sounds in spoken words such as rhymes (whole words), syllables (large parts of words), and phonemes (individual sounds). Hearing "cat" and "mat," and being aware that they rhyme, is a form of phonological awareness, and rhyming is usually the easiest and earliest form that children acquire. Likewise, being able to break the spoken word "teacher" into two syllables is a form of phonological awareness that is more sophisticated. Phoneme awareness, as mentioned previously, is an awareness of the smallest individual units of sound in a spoken word—its phonemes; phoneme awareness is the most advanced level of phonological awareness. Upon hearing the word "sleigh," children will be aware that there are three separate speech sounds—/s/ /l/ /ā/—despite the fact that they may have no idea what the word looks like in its printed form and despite the fact that they would likely have difficulty reading it. Because the terms sound similar, phonological awareness is often confused with phoneme awareness. Teachers should know the difference because awareness

of larger units of sound—such as rhymes and syllables—develops before awareness of individual phonemes, and instructional activities meant to develop one awareness may not be suitable for another.

Teachers should also understand and remember that neither phonological awareness nor its most advanced form—phoneme awareness—has anything whatsoever to do with print or letters. The activities that are used to teach them are entirely auditory. A simple way to remember this difference is just as you can talk on the *phone* without using your eyes, *phon*ological awareness does not require the eyes. Adults can teach phonological awareness activities to a child in a car seat during a drive. The child can be told, "Say 'cowboy.' Now say 'cowboy' without saying 'cow.'" Adults can teach phoneme awareness activities as well by asking, "What sound do you hear at the beginning of 'sssun,' 'sssail,' and 'ssssoup'?" or, "In the word 'snack,' how many sounds do you hear?" or by saying, "Tell me the sounds you hear in 'lap.'" Notice that the words would not be printed anywhere; only spoken words are required. Engaging in these game-like tasks with spoken words helps children develop the awareness of phonemes, which, along with additional instruction, will facilitate future word recognition.

Phoneme Awareness

An abundance of research emerged in the 1970s documenting the importance of phoneme awareness (the most sophisticated form of phonological awareness) for learning to read and write (International Reading Association, 1998). Failing to develop this awareness of the sounds in spoken words leads to difficulties learning the relationship between speech and print that is necessary for learning to read (Snow et al., 1998). This difficulty can sometimes be linked to specific underlying causes, such as a lack of instructional experiences to help children develop phoneme awareness, or neurobiological differences that make developing an awareness of phonemes more difficult for some children (Rayner et al., 2001).

Phoneme awareness facilitates the essential connection that is "reading": the sequences of individual sounds in spoken words match up to sequences of printed letters on a page. To illustrate the connection between phoneme awareness and reading, picture the steps that children must perform as they are beginning to read and spell words. First, they must accurately sound out the letters, one at a time, holding them in memory, and then blend them together correctly to form a word. Conversely, when beginning to spell words, they must segment a spoken word (even if it is not audible, they are still "hearing the word" in their minds) into its phonemes and then represent each phoneme with its corresponding letter(s).

Therefore, both reading and spelling are dependent on the ability to segment and blend phonemes, as well as match the sounds to letters, and as stated previously, some students have great difficulty developing these skills. The good news is that these important skills can be effectively taught, which leads to a discussion about the most effective ways to teach phonological (and phoneme) awareness.

Activities. A scientifically based study by Bradley and Bryant (1983) featured an activity that teaches phonological awareness and remains popular today. The activity is sorting or categorizing pictures by either rhyme or initial sound (Bradley & Bryant, 1983). Sets of cards are shown to children that feature pictures of words that rhyme or have the same initial sound. Typically, one picture does not match the others in the group, and the students must decide which the "odd" one is. For instance, pictures of a fan, can, man, and pig are identified to be sure the students know what they are. The teacher slowly pronounces each word to make sure the students clearly hear the sounds and has them point to the word that does not rhyme (match the others). This is often referred to as an "oddity task," and it can also be done with pictures featuring the same initial sound as in key, clock, cat, and scissors (see Blachman, Ball, Black, & Tangel, 2000 for reproducible examples). The *Words Their Way* program has sorts that teachers and students can easily cut out and then sort for several "oddity tasks" (Bear et al., 2006).

Before moving to print, teachers can promote blending, segmenting, and manipulating of sounds in a word. A simple game called "human robot" can be played with a child at an early age. The teacher informs the child that they are a robot and they can't speak like a human but the child can teach them. The adult then segments simple words putting a short pause between each phoneme, for example, c-a-t. Then ask the child, "How does a human say that?" They may mimic the adult sounds but if the adults blend for "cat," they need only do it once or twice more for the child to gain the sense of the game. Once the adult has segmented and the child has blended, then roles can be switched, and the child can segment words for the adult to blend. Manipulation of sounds can happen with any rhyming game including the song, "The Name Game." The task is to change a phoneme in a word to create another word, or a nonsense word for fun. "Say It and Move It" (Blachman et al., 2000) is an excellent way to transition from spoken language to a desktop or table. This activity requires students to listen to a word, or say a word, and move a chip for each phoneme to indicate the segmented sounds they hear.

Evidence-based activities to promote phoneme awareness typically have students segment spoken words into phonemes or have them blend phonemes together to create words. In fact, the NRP (2000) identified segmenting and blending activities as the most effective when teaching phoneme awareness. This makes sense, considering that segmenting and blending are the very acts performed when spelling (segmenting a word into its individual sounds) and reading (blending letter sounds together to create a word). The NRP noted that if segmenting and blending activities eventually incorporate the use of letters, thereby allowing students to make the connection between sounds in spoken words and their corresponding letters, there is even greater benefit to reading and spelling. Making connections between sounds and their corresponding letters is the beginning of phonics instruction.

Decoding

Like phonological awareness, neither understanding the alphabetic principle nor knowledge of letter-sound correspondences come naturally. Additionally, students who come from homes where English is not the dominant language, or is absent completely in the home, are likely to be less quick in mapping sounds to symbols for a language they neither see nor hear (often) in the home. Regardless, some children can gain insights about the connections between speech and print on their own just from exposure and rich literacy experiences, while many others require instruction. Such instruction results in dramatic improvement in word recognition (Boyer & Ehri, 2011). Students who understand the alphabetic principle and have been taught letter-sound correspondences, using phonological awareness and letter-sound instruction, are well-prepared to begin decoding simple words such as “cat” and “big” accurately and independently. These students will have high initial accuracy in decoding, which is important since it increases the likelihood that children will willingly engage in reading, and as a result, word recognition will progress. Also, providing students effective instruction in letter-sound correspondences and how to use those correspondences to decode is important because the resulting benefits to word recognition lead to benefits in reading comprehension (Brady, 2011).

Alphabetic Principle

When teaching children to accurately decode words, they must understand the alphabetic principle and know letter-sound correspondences. When students make the

connection that letters signify the sounds that we say, they are said to understand the purpose of the alphabetic code, or the "alphabetic principle." Letter-sound correspondences are known when students can provide the correct sound for letters and letter combinations. Students can then be taught to decode, which means to blend the letter sounds together to read words. Decoding is a deliberate act in which readers must "consciously and deliberately apply their knowledge of the mapping system to produce a plausible pronunciation of a word they do not instantly recognize" (Beck & Juel, 1995, p. 9). Once a word is accurately decoded a few times, it is likely to become recognized without conscious deliberation, leading to efficient word recognition.

The instructional practices teachers use to teach students how letters (e.g., i, r, x) and letter clusters (e.g., sh, oa, igh) correspond to the sounds of speech in English is called phonics (not to be confused with phoneme awareness). For example, a teacher may provide a phonics lesson on how "p" and "h" combine to make /f/ in "phone," and "graph." After all, the alphabet is a code that symbolizes speech sounds, and once students are taught which sound(s) each of the symbols (letters) represents, they can successfully decode written words, or "crack the code."

Decoding instruction. As mentioned previously, systematic instruction features a logical sequence of letters and letter combinations beginning with those that are the most common and useful, and ending with those that are less so. For example, knowing the letter "s" is more useful in reading and spelling than knowing "j" because it appears in more words. Explicit instruction is direct; the teacher is straightforward in pointing out the connections between letters and sounds and how to use them to decode words and does not leave it to the students to figure out the connections on their own from texts. The notable findings of the NRP (2000) regarding systematic and explicit phonics instruction include that its influence on reading is most substantial when it is introduced in kindergarten and first grade, it is effective in both preventing and remediating reading difficulties, it is effective in improving both the ability to decode words as well as reading comprehension in younger children, and it is helpful to children from all socioeconomic levels. It is worth noting here that effective phonics instruction in the early grades is important so that difficulties with decoding do not persist for students in later grades.

When providing instruction in letter-sound correspondences, we should avoid presenting them in alphabetical order. Instead, it is more effective to begin with high utility

letters such as “a, m, t, i, s, d, r, f, o, g, l” so that students can begin to decode dozens of words featuring these common letters (e.g., mat, fit, rag, lot). Another reason to avoid teaching letter-sound correspondences in alphabetical order is to prevent letter-sound confusion. Letter confusion occurs in similarly shaped letters (e.g., b/d, p/q, g/p) because in day-to-day life, changing the direction or orientation of an object such as a purse or a vacuum does not change its identity—it remains a purse or a vacuum. Some children do not understand that for certain letters, their position in space can change their identity. It may take a while for children to understand that changing the direction of letter b will make it into letter d, and that these symbols are not only called different things but also have different sounds. Until students gain experience with print—both reading and writing—confusions are typical and are not due to “seeing letters backward.” To reduce the likelihood of confusion, teach the /d/ sound for “d” to the point that the students know it consistently, before introducing letter “b.”

To introduce the alphabetic principle, the “Say It and Move It” activities described above can be adapted to include letters on some of the chips. For example, the letter “n” can be printed on a chip and when students are directed to segment the words “nut,” “man,” or “snap,” they can move the “n” chip to represent which sound (e.g., the first, second, or last) is /n/. As letter-sound correspondences are taught, children should begin to decode by blending them together to form real words (Blachman & Tangel, 2008).

For many students, blending letter sounds together is difficult. Some may experience letter-by-letter distortion when sounding out words one letter at a time. For example, they may read “mat” as muh-a-tuh, adding the “uh” sound to the end of consonant sounds. To prevent this, letter sounds should be taught in such a way to make sure the student does not add the “uh” sound (e.g., “m” should be learned as /mmmm/ not /muh/, “r” should be learned as /rrrr/ not /ruh/). To teach students how to blend letter sounds together to read words, it is helpful to model (see Blachman & Murray, 2012). Begin with two letter words such as “at.” Write the two letters of the word separated by a long line: a_____t. Point to the “a” and demonstrate stretching out the short /a/ sound—/aaaa/ as you move your finger to the “t” to smoothly connect the /a/ to the /t/. Repeat this a few times, decreasing the length of the line/time between the two sounds until you pronounce it together: /at/. Gradually move on to three letter words such as “sad” by teaching how to blend the initial consonant with the vowel sound (/sa/) then adding the final consonant. It is helpful at first to use continuous sounds in

the initial position (e.g., /s/, /m/, /l/) because they can be stretched and held longer than a "stop consonant" (e.g., /b/, /t/, /g/).

An excellent activity that teaches students to decode a word thoroughly and accurately by paying attention to all of the sounds in words rather than guessing based on the initial sounds is word building using a pocket chart with letter cards (see examples in Blachman & Tangel). Have students begin by building a word such as "pan" using letter cards p, a, and n. (These can be made using index cards cut into four 3" x 1.25" sections. It is helpful to draw attention to the vowels by making them red as they are often difficult to remember and easily confused). Next, have them change just one sound in "pan" to make a new word: "pat." The sequence of words may continue with just one letter changing at a time: pan—pat—rat—sat—sit—sip—tip—tap—rap. The student will begin to understand that they must listen carefully to which sound has changed (which helps their phoneme awareness) and that all sounds in a word are important. As new phonics elements are taught, the letter sequences change accordingly. For example, a sequence featuring consonant blends and silent-e may look like this: slim—slime—slide—glide—glade—blade—blame—shame—sham. Many decoding programs that feature word building and provide samples ranging from easy, beginning sequences to those that are more advanced (Beck & Beck, 2013; Blachman & Tangel, 2008).

A final important point to mention about decoding is that teachers must consider what makes words (or texts) decodable to allow for adequate practice of new decoding skills. When letters in a word conform to common letter-sound correspondences, the word is decodable because it can be sounded out, as opposed to words containing "rule breaker" letters and sounds that are in words like "colonel" and "of." The letter-sound correspondences and phonics elements that have been learned must be considered. There are many programs and methods available for teaching students to decode, but extensive evidence exists that instruction that is both systematic and explicit is more effective than instruction that is not (Brady, 2011; NRP, 2000).

Sight Word Recognition

The third important component for successful word recognition is sight words. A small percentage of words cannot be identified by deliberately sounding them out, yet they appear frequently in print. They are "exceptions" because some of their letters do not follow common letter-sound correspondences. Examples of such words are "once," "put," and "does." (Notice

that in the word "put," however, that only the vowel makes an exception sound, unlike the sound it would make in similar words such as "gut," "rut," or "but.") As a result of the irregularities, exception words must be memorized; sounding them out will not work.

Since these exception words must often be memorized as a visual unit (i.e., by sight), they are frequently called "sight words," and this leads to confusion among teachers. This is because words that occur frequently in print, even those that are decodable (e.g., "in," "will," and "can"), are also often called "sight words." Of course, it is important for these decodable, highly frequent words to be learned early (preferably by attending to their sounds rather than just by memorization), right along with the others that are not decodable because they appear so frequently in the texts that will be read.

High Frequency Words and Automaticity

For the purposes of this chapter, sight words are familiar, high frequency words that must be memorized because they have irregular spellings and cannot be perfectly decoded. One third of beginning readers' texts are comprised of familiar, high frequency words such as "the" and "of," and almost half of the words in print are comprised of the 100 most common words (Fry, Kress, & Fountoukidis, 2000). These words need to be learned to the point of automaticity so that smooth, fluent word recognition and reading can take place.

Interestingly, skilled readers who decode well tend to become skilled sight word "recognizers," meaning that they learn irregular sight words more readily than those who decode with difficulty (Gough & Walsh, 1991). This reason is because as they begin learning to read, they are taught to be aware of phonemes, they learn letter-sound correspondences, and they put it all together to begin decoding while practicing reading books. While reading a lot of books, they are repeatedly exposed to irregularly spelled, highly frequent sight words, and because of this repetition, they learn sight words and develop automaticity. Therefore, irregular sight words can be learned from wide, independent reading of books. Children who encounter irregular sight words less often and struggle learning to decode may need to spend a lot more time practicing reading books. These students will also need more deliberate instruction and additional practice opportunities with a teacher who fosters a love and excitement for independent and shared reading.

Sight word recognition instruction. Teachers should notice that most letters in many irregularly spelled words do in fact follow regular sound-symbol pronunciations (e.g., in the word "from" only the "o" is irregular), and as a result attending to the letters and sounds can

often lead to correct pronunciation. That is why it is still helpful to teach students to notice all letters in words to anchor them in memory, rather than to encourage "guess reading" or "looking at the first letter," which are both highly unreliable strategies as anyone who has worked with young readers will attest. Interestingly, Tunmer and Chapman (2002) discovered that beginning readers (at the end of their first year in school and at the middle of their third year in school) who read unknown words by "sounding them out" outperformed children who employed strategies such as guessing, looking at the pictures, rereading the sentence on measures of word reading and reading comprehension.

Other than developing sight word recognition from wide, independent reading of books or from exposure on classroom word walls, instruction in learning sight words is like instruction used to learn letter-sound correspondences. Sources of irregularly spelled sight words can vary. For instance, they can be preselected from the text that will be used for that day's reading instruction. Lists of irregularly spelled sight words can be found in reading programs or on the Internet (search for Fry lists or Dolch lists). When using such lists, determine which words are irregularly spelled because they will also feature highly frequent words that can be decoded, such as "up," and "got." These do not necessarily need deliberate instructional time because the students will be able to read them using their knowledge of letters and sounds.

Regardless of the source, sight words can be practiced using flash cards or word lists, making sure to review those that have been previously taught to solidify deep learning. Gradual introduction of new words into the card piles or lists should include an introduction such as pointing out features that may help learning and memorization (e.g., "where" and "there" both have a tall letter "h" which can be thought of as an arrow or road sign pointing to where or there). Sets of words that share patterns can be taught together (e.g., "would," "could," and "should"). Games such as Go Fish, Bingo, or Concentration featuring cards with these words can build repetition and exposure, and using peer-based learning, students can do speed drills with one another and record scores.

Any activity requiring the students to spell the words aloud is also helpful. "Can You Match It?" is a game in which peers work together to practice a handful of sight words. An envelope or flap is taped across the top of a small dry erase board. One student chooses a card, tells the partner what the word is, and then places the card inside the envelope or flap so that it is not visible. The student with the dry erase board writes the word on the section of

board that is not covered by the envelope, then opens the envelope to see if their spelling matches the word on the card. The goal in all of these activities is to provide a lot of repetition and practice so that highly frequent, irregularly spelled sight words become words students can recognize with just a glance.

Summary

For students to comprehend text while reading, it is vital that they be able to read the words on the page. Teachers who are aware of the importance of the essential, fundamental elements which lead to successful word recognition—phonological awareness, decoding, and sight recognition of irregular words—are apt to make sure to teach their students each of these so that their word reading becomes automatic, accurate, and effortless. According to Garnett (2011), fluent execution of the underlying elements involves teaching "accompanied by supported and properly framed interactive practice" (p. 311). It is easy to see how success in the three elements that lead to automatic word recognition are prerequisite to reading comprehension.

Learning to decode and to automatically read irregularly spelled sight words can prevent the development of reading problems. Students who are successful in developing effortless word recognition have an easier time reading, and this serves as a motivator to young readers, who then proceed to read a lot. Students who struggle with word recognition find reading laborious, and this serves as a barrier to young readers, who then may be offered fewer opportunities to read connected text or avoid reading as much as possible because it is difficult. Stanovich (1986) calls this disparity the "Matthew Effects" of reading, where the rich get richer—good readers read more and become even better readers and poor readers lose out. Stanovich (1986) also points out an astonishing quote from Nagy and Anderson (1984, p. 328): "the least motivated children in the middle grades might read 100,000 words a year while the average child at this level might read 1,000,000. The figure for the voracious middle grade reader might be 10,000,000 or even as high as 50,000,000." Imagine the differences in word and world knowledge that result from reading 100,000 words a year versus millions! As teachers, it is worthwhile to keep these numbers in mind to remind us of the importance of employing instructional practices to ensure that all students learn phoneme awareness, decoding, and sight word recognition—the elements necessary for learning how to succeed in word recognition.

Word recognition, the act of seeing a word and recognizing its pronunciation without conscious effort, is one of the two critical components in the Simple View of Reading that must be achieved to enable successful reading comprehension. The other component is language comprehension discussed in another chapter. The two essential components in the Simple View of Reading, automatic word recognition and strategic language comprehension, contribute to the goal of developing skilled reading comprehension. Because the two strands are so crucial, reading comprehension is likened to a two-lock box, with both "key" components needed to open it (Davis, 2006). Young learners, who can both recognize the words on the page and understand the language of the words and sentences, are much more likely to enjoy the resulting advantage of comprehending the meaning of the texts that they read. Accuracy and effortlessness, or fluency, in reading words serves to clear the way for successful reading comprehension.

Questions:

1. What are some of the assumptions underlying the "Word Recognition" strand of Scarborough's Reading Rope?
2. Explain in your own words how phonological awareness, phonemic awareness, and decoding are interconnected.
3. How might a child know a word in print without ever having studied it formally in school?
4. Brainstorm a list of words that do not follow commonly accepted rules of letter-sound correspondence, for example, "said" vs. paid, raid, maid, etc. Is there any word that struck you as an "oddball" like said? To whom did you report this discovery, if at all?
5. How might a teacher better support a student from a home where English is not the (only) language used? What cultural connections can be made to this approach to reading?

Author's Note: Much of this chapter was taken from the Creative Commons textbook, *Steps to Success: Crossing the Bridge Between Literacy Research and Practice* from the chapter by Maria S. Murray, "Word Recognition Skills: One of Two Essential Components of Reading Comprehension." https://milnepublishing.geneseo.edu/steps-to-success/chapter/3-word-recognition-skills-one-of-two-essential-components-of-reading-comprehension/

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Chapter 2

Language Comprehension and the Simple View of Reading*

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Objectives: Educators will be able to…

- Differentiate among three principal elements of Scarborough's Model of Simple Reading: *background knowledge, vocabulary, and language structures.*
- Explain their interconnectedness.
- Examine concrete examples of instructional strategies for each element.
- Articulate the importance of background knowledge to language comprehension.
- Understand fluency in Scarborough's Model vs. common practice.

Introduction

Comprehension of printed text (as opposed to other modes such as visual or audio that would not require a person to aim for reading comprehension) requires two essential skills: the ability to read the words on the page and the ability to understand the meaning of the words (Davis, 2006). This chapter will cover the central component of successful reading comprehension referred to as "language comprehension" in Scarborough's 2001 Reading Rope Model (see, **Figure 1**). As you can see from the Scarborough model, language comprehension includes background knowledge, vocabulary, language structure, verbal reasoning, and literacy knowledge.

Figure 1: Simple View of Reading: Scarborough's Model

In Scarborough's illustration for what has been called the "Simple View of Reading", the two necessary braids that contribute to skilled reading comprehension are themselves comprised of underlying abilities and strands. While the duality of the model lends to its 'simplicity,' each strand is quite complex due to its underlying elements. In the case of

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language comprehension, students need to steadily accumulate a fundamental base of the five elements, discussed below, and the ability to strategically apply them during reading to comprehend texts. Strategic application of these elements requires readers to continually monitor how well they comprehend its meaning and recall any knowledge they have about the topic, words, sayings, and more. This process is called "metacognition," or thinking about thinking and it can be explicitly developed through reading instructions.

A brief commentary about language comprehension is covered before a close examination of the language comprehension rope with instructional ideas. It is important to note that the instructional approaches should be integrated into a well aligned lesson for planned outcomes, and that all students benefit from explicit instruction about reading. Furthermore, literacy in one language benefits other languages a learner is studying or acquiring so teachers should encourage extensive independent reading in any language.

Language Comprehension and Connections to Knowledge

Reading comprehension includes "the process of simultaneously extracting and constructing meaning through interaction and involvement with written language" (Snow, 2002, xiii), as well as the "capacities, abilities, knowledge, and experiences" one brings to the reading situation (p. 11). In line with the first part of this definition, it is expected that once children have been taught decoding of sounds and letters through blending and segmenting for integration with sight words, and built-up vocabulary related to school topics, they will be on their way to successful reading comprehension. Reading instruction in schools focuses so heavily on developing comprehension because this ability is a central goal of teaching written texts.

A surface skim through the teacher's manuals from published reading programs reveals a multitude of comprehension skills and corresponding strategies are often taught at each grade level (e.g., finding main idea, summarizing, using graphic organizers). Used exclusively, however, these skills and strategies do not necessarily transition students to successfully comprehending texts. Effective reading instruction must also recognize the critical role language comprehension plays in reading comprehension. Language comprehension includes the interaction among someone's background knowledge, vocabulary, language structures like grammar, verbal reasoning abilities, and genre knowledge. Language comprehension is a more general term than listening comprehension,

which is the ability to understand and make sense of spoken language. Complex and multifaceted, the ability to comprehend a text requires an understanding of the text's vocabulary, familiarity with the topic, and a grasp of language structures, such as grammar, verbal reasoning abilities, and genre knowledge (see Cain & Oakhill, 2007). In other words, discerning a text's complete meaning depends on one's ability to both differentiate pieces of a whole and integrate those pieces to gain the gist of an author's meaning.

An aspect of reading comprehension that is often overlooked during instruction is students' language comprehension. For example, a student who has general difficulty with reading comprehension, may comprehend a text about sharks or reefs quite well if his/her parents are marine biologists because he or she has accumulated experiences with ocean-related "language"—its words, phrases, and facts. This same student may not comprehend another text about ham radio operation or the Appalachian Trail. Successful reading comprehension, then, often depends on the language of a text because the more familiarity and knowledge students have with its language, the stronger comprehension will be. Students from disadvantaged backgrounds often struggle with reading comprehension, despite being able to decode accurately and read fluently. They are often believed to have poor reading comprehension ability when the issue is a lack of language comprehension stemming from less world knowledge and fewer experiences aligning with the language encountered in school and school texts. Often, reading comprehension instruction involves teaching students how to engage with written text strategically through deliberate mental actions such as questioning, visualization, and summarizing. However, without prior knowledge to aid sense-making, such strategies are futile.

Not surprisingly, in the earliest grades, an important facilitator of reading comprehension is automatic word recognition since comprehension of a text cannot take place if its words cannot be read or recognized. However, once students can more competently recognize words, the dominant factor driving reading comprehension transforms from decoding words to deciphering language (Foorman, Francis, Shaywitz, Shaywitz, & Fletcher, 1997). Once students can read the words, they extract meaning from texts using their prior and world knowledge (background knowledge), their knowledge of words (vocabulary), and their knowledge of how words go together to create meaning (language comprehension). This accumulation of knowledge can last a lifetime and is never "finished."

Subtle differences exist between the concepts of "knowledge" and "background knowledge." In this chapter, "knowledge" is broadly defined as the total accumulation of facts and information a person has gained from previous experiences (it may also be called general or world knowledge). Knowledge is composed of concepts, ideas, and factual information, which eventually coalesce to contribute to understanding in various situations. While facts, concepts, and ideas are necessary elements of procedural knowledge (e.g. ordering historical events on a timeline, editing a paper for mechanical errors, read a map, etc.), they are also vital for situations or conditions requiring synthesis of information (e.g. writing a comprehensive argumentative essay, interpreting an author's message, etc.; Marzano & Kendall, 2007). "Background knowledge," on the other hand, is a term used in education for a specific subset of knowledge needed to comprehend a particular situation, lesson, or text (it is also called "prior knowledge"). This subset of knowledge stems from prior experiences in life, engagement with others, and interactions with text. When reading a text about dog training, for example, any background (prior) knowledge of dog behavior, vocabulary related to dogs, aspects of training, and so on, can be accessed to support their understanding of the text's overall meaning or gist. Any knowledge of unrelated topics (such as outer space, photosynthesis, or baking) in this particular instance is irrelevant. Thus, the wider the breadth of knowledge a student has accumulated from prior experiences, relationships, and interactions, the better equipped they will be to understand new texts. Of course, it is unrealistic for educators to teach the required background knowledge for every text that students will encounter as they progress through their school years. They can, however, provide the next best thing which is to activate and/or teach prior knowledge essential to understanding a particular text and to teach students to recognize when they lack knowledge on a topic to advocate for instruction or pursue investigation. Over years of instruction, a wide base of general knowledge builds and can be drawn upon to problem solve and create meaning from written texts.

World or general knowledge comes from years of exposure to books, internet sites, streaming services showings, experiences, conversations, and knowledge-rich school curricula. Its value cannot be understated. Willingham (2006) summarizes the findings in cognitive science regarding the significance of knowledge in education this way:

> Those with a rich base of factual knowledge find it easier to learn more—the rich get richer. In addition, factual knowledge enhances cognitive processes like problem

> solving and reasoning. The richer the knowledge base, the more smoothly and effectively these cognitive processes—the very ones that teachers target—operate. So, the more knowledge students accumulate, the smarter they become. (p. 30)

Difficulties comprehending complex texts encountered in college and careers have been attributed to a lack of general knowledge. Both the Council of Chief State School Officers (CCSSO, 2013) and the National Research Council's Committee on Defining Deeper Learning and 21st Century Skills (NRC; 2012) call for an increase in rigorous content knowledge in order for today's students to achieve college, career, and citizenship readiness. According to the CCSSO (2013), students must also be able to demonstrate "their ability to apply that knowledge through higher-order skills including but not limited to critical thinking and complex problem solving, working collaboratively, communicating effectively, and learning how to learn" (p. 6).

Meanwhile, college professors like Duke University's Bernard Schweizer are attempting to address students' deficiencies. Schweizer (2009), a freshman composition instructor wrote about an eye-opening incident he experienced during his classes. After assigning both his remedial and advanced classes a four-page article on climate change from a popular college-level anthology of essays (see McKibben, 2006), he realized his students' comprehension of the essay was "flat, anemic, and literal rather than deep, rich, and associative" (p. 53). Upon questioning his students on the general knowledge items within the text—general facts, figures, locations, words, and common expressions—he reached a sobering conclusion. In the remedial class, just one student could identify Gandhi, none knew Ernest Hemingway, and two knew that Job was a character in the Bible. In the more advanced class, four out of 15 students recognized Gandhi or Hemingway, none knew the word "quixotic," and few could comprehend certain expressions within the text (e.g., "something is in the offing") or its allusions (e.g., "the snows of Kilimanjaro are set to become the rocks of Kilimanjaro"). Reflecting on the literacy-related consequences of this lack of word and world knowledge, Schweizer noted that his students were "not only hampered by a lack of factual knowledge, but that this shortcoming translates into problems with diction and literacy as well" (p. 52). Remarkably, comprehension of this paragraph alone requires familiarity with and a basic understanding of these words and phrases: *Duke University*, *attributed*, "*eye-opening incident*," *remedial*, *anthology*, "*sobering conclusion*," and *allusions*. A lack of language comprehension related to these words will hamper your reading comprehension indeed!

Background Knowledge

One of the elements necessary for language comprehension is background knowledge. As previously discussed, background knowledge is a particular subset of knowledge (e.g., facts about the world, events, people, sayings, and phrases) necessary to comprehend and learn from a particular situation, lesson, or text. Young readers learn to strategically apply their background knowledge to interpret a text's meaning. As a small example, consider the following sentence: "Initially Richard was upset when police told him they found bugs in his office, but to avoid prosecution he agreed to let them remain until the investigation was completed." To comprehend this sentence either in isolation or within the context of an entire text, one will need to have learned that (a) "bugs" are spying devices, (b) being watched secretly is upsetting, and (c) Richard is cooperating with the police. Without this background knowledge, the author's intended meaning may be misconstrued as having to do with insects.

Consider another example in which students read a story about a boy who is angry that he was not selected to play on the football team. The boy insists, "I really didn't want to play football anyway!" His mother responds, "Sounds like a case of sour grapes to me!" Students familiar with the Aesop's fable "The Fox and the Grapes" will understand the reference to "sour grapes" in this particular story and in all subsequent texts, and they will be able to interpret the subtle nuances of resentment that comes about after rejection. A student with no exposure to the fable may believe that the boy really did not want to play football and will not understand why the mother is talking about grapes. Thus, the meaning is incomplete. The familiarity associated with background knowledge allows readers to strategically infer the author's meaning with much less effort. Knowledge leads to more knowledge, making learning easier (Willingham, 2006).

As summarized in Willingham (2006), research in cognitive science shows how background knowledge helps students not only comprehend what they read but, just as importantly, *remember* what they have learned. Recall is supported in a variety of ways. First, as seen in the sour grapes example, background knowledge for a text makes stopping for clarification unlikely; thus, the author's point can be comprehended more easily. Second, a diverse store of background knowledge allows readers to arrange sequences of events in texts into connected, meaningful units or sequences that can be more easily analyzed, understood, and remembered. Without background knowledge, words and sentences in a

text easily become disjointed, unrelated, random sequences. For instance, imagine that a passenger in a small plane who is likely unfamiliar with the mechanics of an aircraft is asked by the pilot to read off the items from preflight checklists. Due to lack of background in technical aviation, the items seem arbitrary and unrelated rendering dozens of unfamiliar words and terms essentially meaningless (e.g., throttle 2000 RPM, magnetos max drop 175 RPM, press-to-test annunciator panel, electric fuel pump off, fuel pressure check). Consequently, if asked to recall the information after the flight, it is unlikely that the passenger would be able to remember. Conversely, if a different traveler possessing the necessary background knowledge is asked to read the same checklists, it would stand to reason that their comprehension and recall would be greater. This understanding is not only because the items on the list would probably be familiar and meaningful, but also because background knowledge stimulates one's access to 'chunking.' As they read the list, the second passenger would likely "chunk" items together, grouping similar items into meaningful categories and sequences, a skill that supports stronger recall. For example, the second passenger would recognize that some items relate to engine speed, while others are associated with the fuel system. Identifying relationships is one way to reduce the amount of information one is required to memorize. The information is stored more efficiently, thereby making recall quicker and easier. because the items on the list would be familiar and meaningful. Thus, the background knowledge of the second passenger supports stronger and longer lasting comprehension of the experience.

The frequently cited experiments of DeGroot (1946/1978) and Chase and Simon (1973) illustrate this phenomenon of "chunking." In both studies, researchers examined how the differences in background knowledge (via the experiences) between master and novice chess players influenced their memories. Chess masters, supported by experiences of participating in thousands of chess matches, were pitted against novices in a simple experiment. For just a few seconds, chess masters and novices were shown pictures of chessboards in which the pieces were configured in positions from advanced level matches. The pictured pieces were not arranged on the boards randomly; their positions were realistic. After momentarily viewing the pictures, players were asked to reconstruct the positions of each piece using a real board. The masters recreated the positions almost perfectly, while the novices only placed about half of the pieces successfully. The researchers attributed the accuracy of the masters' recall to their ability to categorize and chunk information, or, in the

case of chess, to chunk multiple, meaningful groups of pieces. The novices could only memorize positions of *single* pieces, whereas the masters memorized positions of *sets* of pieces that made sense to them in terms of familiar play-structures accessed via a wealth of experience. This knowledge, accumulated from years of playing chess, ultimately contributed to their expertise.

In a video recreating this experiment, chess grandmaster Patrick Wolff (Simons, 2012) reveals his strategy in recreating the board placements. Wolff states that he noticed where the pieces clustered and that he noted the logical connections between the pieces. He recognized the meaningful chunks. In a book about the contributions of effort and practice to talent, Colvin (2008) comments on chess player experiments, noting that, "instead of seeing twenty-five pieces, they may see just five or six groups of pieces" (p. 100). In any realm, meaningful chunks can only be formed by those having the knowledge and background experiences to understand relevant associations. In the case of chess players, certain pieces defend others in strategically particular positions and masters have learned to pay close attention to a potential line of attack. Similarly, skilled readers group certain elements of a text to support their understanding of written texts. Chunking certain letters within long words enables rapid and accurate decoding, and chunking certain words and ideas enables comprehension of an author's message.

Meurer (1991) links the ability to recognize relationships and purposefully group words and ideas to the concept of "schemata." Our understanding is structured by reading schemata that actively organize knowledge in our minds while we read; the resulting patterns and relationships combine with our prior knowledge to support meaning construction. As Meurer explains all readers have schema for various concepts, such as when something "breaks." Along with an understanding of a word's basic meaning, schemata are composed of subcomponents and ideas related to the concept of "breaks": items that can be broken, causes for breaking, characteristics of being broken, just to name a few. ways that things can cause things to be broken, and what it means for something to be broken, just to name a few. He further illustrates the role schemata play in meaning construction with the following sentence: "The karate champion broke the cinder block." It is not immediately apparent to the reader what the champion used to break the cinder block, so the reader must access their schema for "break" and "karate champion" in order to successfully infer that what broke the cinder block was not a hammer or a chisel, but the karate champion's hand or foot. The

inability to automatically chunk together and activate links between related words and ideas impedes reading comprehension.

In any field, setting, or circumstance, new material that has familiarity is more readily learned because it is easier to understand and because it is supported by and connected meaningfully to what is already known. The beauty and value of background knowledge is that it provides the familiarity that is crucial for connections that both create new learning and allow for the new learning to be remembered.

Background Knowledge Instruction

General knowledge is gained over many years engaging in multiple contexts and through multiple texts. A student may not have the necessary background knowledge when a teacher plans, therefore, any lesson plan must include activities to provide and/or activate relevant knowledge. The wide variety of content areas in schools overtime provide an integrated sequence of rich, engaging, multicultural content spanning history, science, music, visual arts, mathematics, language arts, and more. Knowledge from each of these areas is likely to appear in texts in subsequent learning but any lesson may need ideas of prior knowledge activated.

In the earliest grades, before students can read books independently, the content and concepts that build background knowledge are usually developed through teacher read-aloud of a wide variety of texts from different cultures and contents. Although read-alouds are typically done in the elementary grades, there are many illustrated books related to significant people and events in various disciplines that can be used at the secondary levels. The images in picture books have the added benefit of providing visual input of ideas to students who are new to the language. Teachers can also develop knowledge of a topic with photographs in a slideshow if no picture book is available, and many of the concepts that will be encountered in print can be seen before reading.

Students are expected to extract information from texts by focusing on what the author intended for them to understand, rather than relying too heavily on their prior knowledge, experiences, or opinions to construct meaning (*Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects*, CCSS; 2010). Teachers are informed, by CCSS, to downplay any lengthy, explicit focus on their students' existing knowledge before reading and in discussions. Some teachers posit that this may serve to equalize the outcomes for children who have varying degrees of

knowledge about various topics. However, as Shanahan (2014) explains, avoiding discussion of background knowledge will not serve to allow children to interpret and comprehend texts more equally, because it would be nearly impossible for children to avoid using their world knowledge to construct meaning while reading. Without background knowledge of a topic, a student has no advantage when reading and may, mistakenly, be viewed as having poor comprehension.

Shanahan (2014) provides some practical instructional suggestions for activating background knowledge before and during reading. An abridged and modified list appears below:

1. When introducing texts, avoid lengthy introductions and tedious contributions of students' prior knowledge that could potentially impair comprehension. A simple statement such as "We're going to read about how animals camouflage themselves" may suffice. The goal is to be brief and strategic (e.g., what is the purpose of the text, what will students bring to it, and what information absolutely needs to be provided; note all the other suggestions below for more clarification). Too much time spent during pre-reading activities may take precious time away from the actual reading, may become boring or repetitive, and may steer students to the wrong focus, distracting them from the entire lesson. See an additional blog post in which Shanahan (2012) speaks specifically about this topic: http://www.shanahanonliteracy.com/2012/02/pre-reading-or-not-on-premature-demise.html
2. When introducing a topic or genre that students will be reading, avoid revealing information that you will want them to extract from the text(s) on their own.
3. Pre-teach necessary information students will need if it is not in the text (e.g., a text on climate change may not have been written for young students, so vital references to geography or technology may need explanation).
4. Consider the differing background knowledge needs of students from diverse cultures and pre-teach information they may need to comprehend particular texts.
5. Do not focus on activating background knowledge about topics in the text that are not needed for its comprehension (e.g., a text focusing on how an octopus camouflages itself does not require discussion or instruction about oceans).

6. When using multiple texts to develop background knowledge, introduce them in an order that will support and reinforce those resources that may come before or after. Initial resources may cover a particular topic in a general manner, followed up by texts that cover the material from the initial texts and delve deeper into the topic.

Vocabulary

Vocabulary knowledge is a prominent predictor of reading comprehension and is depicted as a central thread in the language comprehension component of the Simple View of Reading because of its connections to background knowledge and language structures (Scarborough, 2001). As stated previously, the level of a child's vocabulary knowledge is a strong predictor of reading comprehension (Duncan et al., 2007). This seems obvious since not knowing the meaning of words in a text makes it quite difficult to comprehend it. As Adams (2010) eloquently points out, "What makes vocabulary valuable and important is not the words themselves so much as the understandings they afford. The reason we need to know the meanings of words is that they point to the knowledge from which we are to construct, interpret, and reflect on the meaning of text" (p. 8). If a student can read well in a language of the home, many of the same reading skills will transfer to their additional language of English.

The development of a child's vocabulary begins at infancy when a baby starts hearing the speech of caregivers. Oral language experiences, such as in-person conversations, digital recordings, or voices created during the reading of children's books, are primary means for accumulating vocabulary. By the age of two, children usually speak about 200 to 300 words and understand many more, and once in school, they learn approximately 3,000 words per year, and can comprehend many more than they can read (Nagy, 2009). To accomplish this rate of word learning, it is critical to ensure that students are learning new words each day. This is especially true for students with less educated parentage who are likely exposed to fewer words in their first three years of life that align with the language required in schools (Hart & Risley, 1995). Children from more affluent households tend to know thousands more words upon entering school, which benefits their ability to understand, participate in, and profit from the language of schooling. Additionally, students from homes with multilingual families and parents may have exposure to ideas and words in several languages that fail to benefit them in a schooling system that teaches extensively and/or exclusively in a single

language like English. Although, students from multilingual homes often know the content ideas in a language other than English, they need teachers skilled in providing background knowledge and vocabulary in a variety of modes to transfer ideas into the language necessary to promote additional learning.

Vocabulary Instruction

Instruction in vocabulary should begin with thinking about the different levels of "knowing" a word. Upon hearing a word, we can say (a) that we have never heard of it, (b) that we have heard of it, but we do not know it, (c) that we know it, or (d) that we both know it and can use it (Nagy, 2009). The more deeply we know a word, the more likely we will be to understand it when we hear it or read it, and the more likely we are to use it when we speak or write. Ideally, instruction supports students to a level of knowing and using words when they converse, write, or read. Vocabulary learning occurs either incidentally (words are learned through exposure and experiences) or intentionally (words are deliberately and directly taught). Most words in our vocabulary are learned incidentally, through conversations or independent reading (Adams, 2010). This means that most vocabulary learning will not occur through explicit instructional means but through opportunities available in the child's environment to encounter and resolve meanings of new words. Children who have learned to read independently are at an advantage in terms of learning words incidentally because they are able to independently encounter new words and infer their meaning while reading.

Incidental vocabulary instruction is enhanced through rich and varied oral language discourse and independent reading. Even though "incidental" learning occurs because of activities that may not involve any deliberate teaching, incidental learning often involves a level of intentionality on the part of teachers. Teachers should consciously fill their everyday classroom language with rich, unique words to foster incidental learning. A classroom that is rich with words promotes awareness of new vocabulary and a curiosity for learning new words. Rather than simplifying language for students, conversations should be embedded with sophisticated words: "Jordan, why don't you *amble* over here and let me *glance* at that," "Please shut the door; those students in the hall are causing quite a *commotion*! What a *ruckus*!" and "Oh my, Jake, the lion on your t-shirt has such *sinister* eyes! It *terrifies* me!"

Vocabulary words that should be intentionally taught are those essential for understanding texts, those that are likely to be encountered across multiple texts, or those that are particularly difficult to understand (Beck, McKeown, & Kucan, 2002). Activities for

directly teaching vocabulary include using graphic organizers (for a collection of free graphic organizers visit https://www.teachervision.com/graphic-organizers/printable/6293.html), or a three-column chart with a first column providing the word, students' written definition in the second column, and a drawing to assist the student in remembering the word. Repetition of vocabulary may happen through reconstructing popular word games (for example, Hangman, Taboo, Articulate, Heads Up, Pictionary, etc.) with vocabulary from an instructional unit.

Text Talk (Beck & McKeown, 2001) is an evidence-based vocabulary (and comprehension) building intervention that can be easily built into activities. Teachers pre-read the selected text, choosing three to five vocabulary words that are "Tier 2" words. Tier 2 words are sophisticated, occur frequently in conversation and print, and are used across multiple domains and contexts. Examples of Tier 2 words are *unique, convenient, remarkable,* and *misery* (See Beck et al., 2002). Tier 1 words are those that are basic and, for speakers of English, do not require instruction in school (e.g., *wall, water, fun)*, and Tier 3 words are low-frequency words that are specific to domains or content areas (e.g., *photosynthesis, Constantinople*). During a reading activity that is done in Text Talk fashion, open-ended comprehension questions are asked. Open-ended questions require a meaningful interactive response rather than a one-word reply. Examples of an open-ended question are "How do you think that made the boy feel?" and "Why did the man decide to share his food?" To answer each of these questions, an extended, multiple-word response is required. Examples of close-ended questions requiring only a single word response include "Is the boy mad?" and "Which food did the man share?" Interactive extended responses and dialogue promote oral language development and allow the teacher to monitor students' vocabulary use and comprehension. After the initial reading or during a second reading of a text, the preselected Tier 2 vocabulary words are defined by the teacher using simple definitions (e.g., "To *coax* someone means to use your words to get them to do something"). The meanings of the words are discussed within the context of the text (e.g., "The mother *coaxed* her daughter to take a bath, meaning she used words to convince her to get into the bathtub"), and the teacher provides examples of the words within other contexts ("When my mother got older, I had to *coax* her to join us on vacation"). Finally, the students are asked to apply their knowledge and use the words in a personal context to ensure that they have the correct understanding of their meanings ("Jared, can you share an example of a time when someone

coaxed you to do something?"). Additionally, if the text is a picture book for read-aloud, it is beneficial to read the text *before* showing the pictures so that the illustrations do not interfere with attention or comprehension. This procedure is effective in getting students to pay attention to the words being read, and thus, is helpful toward their comprehending the language of the text (Beck & McKeown, 2001). It fosters their ability to comprehend decontextualized language—language that is "outside the here and now" (p. 10)—and leads to comprehending the vocabulary and text.

Language Structures

Another contributing factor language comprehension is language structure—the relationships between the words and sentences in a text. Semantics is different from vocabulary because it extends beyond the individual meaning of words to relationships among words, phrases, and sentences. Understanding the semantics of language enables comprehension because it clarifies the content—the network of events and relationships that exists in texts. For example, reading a sentence about a jug breaking and glass being scattered all over the floor might cause confusion, since jugs are typically not thought of as being made of glass. Looking back at the model of skilled reading in Figure 1, it is evident there are many facets to language structures, including knowledge of genres, grammar, and strategies for reading different types of texts (e.g., poems versus informational texts). For this chapter, major interconnected components of language are categorized as form, content, and use (see Bloom & Lahey, 1978).

Importance of Language Form: Morphology and Syntax

Language form comprises the rules for how words are structured (see 'morphology' described below) as well as the rules for the arrangement of words within sentences and phrases (see 'syntax' described below). The act of constructing meaning while reading is complex, so it is not surprising that morphology and syntax also contribute to reading comprehension.

Morphology is the study of morphemes in a language. Not to be confused with phonemes, which are the smallest units of sound in spoken words, morphemes are the smallest units of meaning in words (to remember this, consider that "morphemes" and "meaning" both begin with the letter "m"). Words contain one or more morphemes, or units of meaning. For instance, "locate" is a word that is a freestanding morpheme because it has

just one unit of meaning and can stand on its own. By attaching another morpheme, the suffix "-tion," to create "location," there are now two units of meaning: "locate" and the action or condition of locating, "tion." "Tion" is a bound morpheme because its meaning depends on its connection to other words; it cannot stand on its own. A third morpheme, the prefix "dis," changes the meaning of the word yet again, "dislocation." In sum, the word "dislocation" is made up of three morphemes, each of which contributes its own meaning. Similarly, "cat" is a freestanding morpheme (a singular feline animal) but adding the bound morpheme—s—signals a change in meaning and the reader now pictures more than one cat.

Another aspect of language form, syntax, is commonly referred to as grammar. It is the combining and ordering of words in sentences and phrases that enables comprehension of a text. For example, in English, when the article "a" or "an" appears in a sentence, it is expected that a noun will follow. Syntax includes sentence construction elements like statements, commands, and combined sentences as well as components such as nouns, adjectives, and prepositional phrases. These are important for future teachers to know because effective use of these will allow students to comprehend text more successfully, and they will also allow students to demonstrate command of the conventions of the language in their writing pieces.

Language Form Instruction and Language Use

The WIDA Consortium advocates for explicit instruction of the rules of morphology and syntax to benefit learners, especially multilingual learners (see https://wida.wisc.edu/). For example, morphology instruction includes root words, prefixes, and suffixes along with derivations of Greek and Latin roots (e.g., "chron" is the Greek root for "time" in chronicle, synchronize, and "cred" is the Latin root for "believe" in creed, incredible, credulous). Morphology charts of root words, prefixes, and suffixes can be compiled over time and displayed on a wall so that students can refer to them while reading or writing. Charts could feature a list of suffixes that indicate people nouns (e.g., -er, -or, -cian, -ist), suffixes that create verbs (e.g., -ize, ify), or base words that change spelling and pronunciation (e.g., sign/signature/design, deep/depth). Incidental exposure to such morphological elements enhances word awareness (the act of noticing and attending to features of words), vocabulary, and, of course, language comprehension. Teachers should teach these in connection with a text under study to provide context to remember the item(s).

Semantics. Semantics requires knowledge of vocabulary (a word's meaning, and perhaps its synonyms and antonyms), as well as syntax. Note that once again, there is an "m"

in "semantics," but it is in the middle of the word, which may help you to remember it has to do with the meaning that ties words and sentences together. Semantics are just as important as background knowledge in forming correct judgments about the text being read. Part of this knowledge includes the meaning of humor, slang, idioms (i.e., combinations of words having a figurative meaning as in "it's raining cats and dogs" or "he was feeling blue"), metaphors (a comparison of two things as in "she is my sunshine") and similes (comparisons of two things using "like" or "as" as in "her laughter is like sunshine"). Languages have thousands of common and often subtle semantic attributes that involve analogy, exaggeration, sarcasm, puns, and parables to convey world knowledge. Teachers can explicitly teach these attributes so that they are recognized more readily, explicitly define sayings and expressions, and demonstrate examples and nonexamples. For example, a teacher could demonstrate examples and nonexamples of exaggeration ("I have a million papers to grade!" vs. "I have three papers to grade"). As soon as schooling begins, semantic conventions should be taught, such as in the way that "once upon a time" signals the beginning of a fairy tale. Like vocabulary, most semantic knowledge is derived from previous experiences and background knowledge. Teaching phrases to students through exposure to discussions, reading, and other venues like shows, movies, and online videos does a lot to promote language comprehension.

Pragmatics. Language use is termed pragmatics. Pragmatics are the rules of language that lead to appropriate use in assorted settings and contexts. Each setting (e.g., school, home, restaurant, job interview, playground) or context (e.g., greeting, inquiry, negotiation, explanation) has a particular purpose. To communicate appropriately, students must learn patterns of conversation and dialogue that occur in assorted settings. For example, use of language can vary according to a person's status, so whether talking at home to a parent (a more casual use of language) or talking to a teacher at school (a more formal use of language), the setting and the status differ, and language use must adapt accordingly. Understanding the nuances of pragmatics contributes to language comprehension, which in turn enables a reader to recognize its uses in written text, leading to more successful reading comprehension.

The pragmatics of language use in school requires students to comprehend academic language. Students, especially English language learners and students with social difficulties, must comprehend the differences between conversation and academic language. Students'

language use in assorted settings (e.g., playground conversations, discussions with teachers) often requires teachers to provide clarification and elaboration. Students can perform enjoyable skits demonstrating the differences in language use in various situations and teachers can monitor and model language use as students tell stories, describe events, or recount personal experiences.

Fluency and Assessment

In the Scarborough Model, fluency is a result of several strands of reading and language coming together for skilled reading. None-the-less, schools all over the United States regularly push children to read "nonsense words" to show their ability to make sound letter correspondences and then to read out loud a short passage in a timed reading. This paradigm became incredibly popular after an organization provided these items without cost and soon teachers turned the tool into a verb. The action became known as "dibeling" students. The "nonsense words" were rightfully attacked by parents and multilingual advocates because many of the letters formed legitimate words in other languages. Better instructional time would be spent having early learners sound out valid English words to increase their exposure to the authentic language. The passages that followed the nonsense words would often be read (1) with a teacher holding a stopwatch, an experience that is more akin to a footrace than an authentic reading experience, and (2) with multiple repetitions of the passages, a practice that is like wearing the same underwear every day—stale and stinky. These types of measures are far removed from fostering a love of learning and lifelong learning. Repeat exposure to texts can be advantageous to gaining language comprehension, increasing an interest in a content area, and assessing both knowledge and fluency of authentic texts.

Skits, readers theatre, choral readings, echo readings, poetry, songs, and other activities that require students to repeat a text several times for performance has two major advantages: firstly, they develop fluency, i.e., reading with speed, accuracy, and proper expression (Snow, 2002); secondly, they promote greater engagement with the information in the text. For example, at younger ages, students could sing a song about the biome they inhabit either before or after they read a text about it. At the higher levels of education, a teacher of chemistry may want students to memorize the first elements of the periodic table to easily remember what the column and row configuration represents. The instructor could introduce students to a video clip of a song and have students sing along. The whole class

could read a short explanation of the columns and rows together in a choral read, or the instructor could read a portion of the explanation and have students echo read. After students have learned about the periodic table, they could create characters for the first elements of the table and write monologues about them and/or put them into an interaction for a short skit or re-enactment of a text for readers theatre. The mindless repeating of texts for a timed measure of fluency is less effective than providing students opportunities to demonstrate both their fluency of language and knowledge of content. Songs, poetry, and scripts (for theater, skits, podcasts, etc.) that students develop, write, and perform to demonstrate their learning of a topic not only promotes fluency but can also be used for assessment purposes.

Summary

To help students develop language comprehension, the underlying meaning-based elements of reading—background knowledge, vocabulary, and language structures—must be taught and monitored. Unlike teaching students to recognize words accurately and automatically so that they become fluent readers, teaching the elements of language comprehension as students rise in the grades must be done so that students become increasingly strategic about extracting the meaning from texts they read. Language learning is an incremental, ongoing, developmental process that lasts a lifetime. With each new bit of background knowledge, each new vocabulary word, and each new understanding of language use, students can integrate this knowledge strategically to comprehend text.
The two essential components of the Simple View of Reading, automatic word recognition and strategic language comprehension, contribute to skilled reading comprehension. Once students become proficient decoders and can automatically identify words, the role of language comprehension becomes increasingly important as students shift from paying attention to the words to paying attention to meaning of increasingly difficult texts across years of schooling.

Teachers must be ever mindful of the presence or absence of background knowledge that students bring to the task. As important as it is for students to monitor their comprehension, it is equally important for teachers to continually monitor each student's background knowledge and comprehension so that they can step in to build and supply what is missing in their understanding. The value of the knowledge that students bring to their

reading should never be sacrificed for the sake of comprehension strategy instruction. They must go hand in hand.

Questions:

1. The author describes how morphemes might change the meaning of a word. Tell me about an instance where *you* used morphemes (such as Greek and Latin roots) to help you understand the meaning of a word.
2. Have you ever had an experience where you misunderstood the text because you did not have the relevant background knowledge?
3. What is a lesson that you might need to activate background knowledge for?
4. Provide specific examples from books or digital media that you might use in a middle or high school classroom to demonstrate the relationship between comprehension and each of the following: background knowledge, vocabulary knowledge, and semantics. Explain the relationship.
5. How do you know if an English language learner does not have the background knowledge or if they don't "understand" the information in English?

Author's Note: Most of this chapter comes from the Creative Commons resource of Murray, M.A. (2016). Language Comprehension Ability: One of Two Essential Components of Reading Comprehension. In Kristen E. Munger (Ed.), *Steps to Success: Crossing the Bridge Between Literacy Research and Practice*. Retrieved from https://milnepublishing.geneseo.edu/steps-to-success/chapter/4-language-comprehension-ability-one-of-two-essential-components-of-reading-comprehension/

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Chapter 3

Recounts and Narratives in the Middle School*

Rachel Beckwith

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Objectives: Educators will be able to…

- Explain the differences between recounts and narratives are explained.
- Distinguish between a personal recount and a short narrative about the same event.
- Examine similarities and differences between the two personal stories.
- Gain a few instructional ideas for moving students toward more complex narratives.

Introduction

Our humanity endures through story; "humans are storytelling organisms who lead storied lives" (Savin-Baden & Van Niekerk, 2007, p. 461). Braiding the richness and complexity of our experiences, we use story to communicate our core. It is through the telling of stories that "we are able…to impose order and coherence on the stream of experience and work out the meaning of incidents and events in the real world" (Carter, 1993, p. 7). Essentially, we interpret the world around us through story. However, how we communicate with story depends on our purpose; our intentions dictate our path. In particular, two strands of storytelling - recount and narrative - may relate closely but engage the reader in distinctly different ways.

This chapter has two purposes. First, I will differentiate between recount and narrative. Second, I suggest strategies for engaging with each. Let's begin by looking at examples. Consider the following text:

* Editors' note: This chapter is graciously provided at the request of the editor.

> It was a Saturday evening, and I was preparing to turn in for the day. Before I headed to my bedroom, I gathered my shoes and socks in my arms and gave my cat a quick pat. Yawning, I plodded to the staircase. I stopped suddenly with the realization that I forgot to grab my sweater. But when I returned to the living room, the sweater was not on the arm of the couch where I had left it. It hadn't fallen to the floor either. My favorite sweater was missing!
>
> I began searching. First, I looked in the washer and dryer, then the hamper. I also looked in my car, on the coat rack, and under my bed, but I couldn't find it anywhere.
>
> Frustrated, I fell heavily on the couch. My cat jumped up next to me and started purring; I started to pet it. Started by a noise, my cat leaped off the couch. As my hand dropped onto the cushion, it brushed against a piece of fabric that poked up from the space between pillows. I grabbed the corner and tugged. It was my sweater!
>
> I moved it around in my hands, examining the fabric. It looked worn and faded, and I noticed that a button was missing. There were also a few small holes and snags. The sweater was certainly old and well-loved.
>
> I was too tired to get up, so I stretched out on the couch. There, I fell asleep, clutching the sweater to my chest.

And this one:

> I'd been combing my house for the past hour searching for my favorite sweater. The one I wear to all the campfires. The one I was wearing when I went into labor. The one that I've had since I moved into my first apartment those many years ago.
>
> It's been through a lot with me. And now it's missing.
>
> I look in the washer and dryer. I look in the hamper. I look in my car and under the bed. I even call for it (which sounds ridiculous, but I'm desperate).
>
> Frustrated, I slump on the couch. My cat jumps up with a meow and lazily curls up next to me, purring. I reach out to absentmindedly stroke its head, all the while wondering where my sweater was. A noise from outside startles my cat, and he darts away to investigate. My hand falls to the empty spot, warmed from the cat's body.
>
> But there is something else. My hand brushes against a swatch of fabric protruding from the cushions. Something familiar.

> I pull the missing sweater from the depths of the couch. How did it get there? I wonder. No matter, it's found!
>
> I pull it on, relishing in the comfort of the memories. A thread catches my attention. It seems that a button is missing. Something I can replace later. But as I examined the fabric more closely, I realized the missing button is the least of my concerns. Time has left the sweater worn and faded. There were a few small holes and snags and stains of uncertain origin. The sweater, once fresh and fashionable, seems to be wasting away.
>
> I hug myself in the comfort and safety of the sweater, but I realize the sweater is not really that comfortable anymore. The fabric is rough from washing and wearing. Is it time to retire my old friend? Yes, it's time to let go.
>
> I yawn and snuggle deeper into the couch, resolved to pack it up tomorrow. One last night won't hurt.
>
> But for now, I'll fall asleep thankful for our story.

Recently, I wrote about the experience of losing my favorite sweater. In the first example, I described the steps I took to find it by retracing the sequence of events in an objective and straightforward style. In the second example, the reader is thrust into my mind, experiencing what I was thinking and feeling as I looked.

The two examples illustrate the difference between recounts (example one) and narratives (example two). Derewianka (1990) refers to the first as a personal recount, but it could turn into an "imaginative recount" by having the cat describe the series of events of the human's search or the cat could tell the reader about its search for a fuzzy toy. As is, the stories are both told from a single human's perspective and the first-person point of view as shown with the pronoun "I". The first-person point of view is common in both recounts and narrative, but a story can be told from other points of view. The third-person point of view is demonstrated later in this text as more information about the genres and instruction is presented.

Key Traits of Recounts

A recount is a chronological, objective telling of past events. A recount can also be referred to as a 'retelling, 'because you are recalling a circumstance or experience. While a

recount is typically associated with personal experiences, recounts may also include biographies, historical accounts, and news stories. Recounts allow one to share past experiences, inform others, and record events for future purposes. They are generally factual, clear, straightforward, and written so that the reader feels they have personally experienced the event. Writers can do this by grouping relevant information together and sequencing the re-telling with time conjunctions, such *first, then, finally,* etc. It is important to remember, too, that recounts are written in past tense because they are summarizing and describing events that have already occurred.

In the example above, I identify the who, what, when, and where of a sequence of events. First, I set the time and place (Saturday evening at my house). After I identified a topic (a lost sweater), I described my search. Familiarizing the reader to time and place at key stages of the text are especially important in a recount. Besides thinking chronologically, a skilled recount writer must also be able to observe keenly and orient themselves to relevant details. Their writing must demonstrate clear, coherent, and logical organization that conveys a purpose. Developing the skills necessary to write a recount (observation, organization, chronological thinking, clarity, and detail orientation) supports future, more complex narrative writing.

While recounts may include personal reflection and descriptive language, they are most often superficial. My retelling writing of the missing sweater (the first example), while specific, lacked embellishment, as well as the traditional elements of story craft, such as the use of literary devices and dialogue. In the following section, I describe in more detail what this looks like.

Key Traits of Narratives

As opposed to the straightforward and sequential nature of the recount, a narrative is characterized by more fluidity, depth, and complexity. While framed by structural elements (plot, setting, characters, conflict, and resolution), the narrative is not 'tied' to a specific order or sequence. Thus, the narrative storyteller is "granted creative liberty" to convey experience (Rafique, 2023, par. 1). The freedom to weave a story, rather than simply tell, adds a richness and thickness that activate the reader's imagination.

Indeed, to engage with narrative, one must have access to a great imagination. To fully appreciate the power of a narrative, writers should be able to not only visualize, but also

believe, *what could be*. A skilled narrative storyteller, then, must speak or write in such a way that the reader believes it, too. To do this, the narrative storyteller creates well-developed characters, a vivid setting, a compelling plot, authentic dialogue, and a challenging obstacle. The elements intertwine and interact in ways that encourage the reader to think about the world in new ways.

Beyond the foundational structural elements, there are a range of literary tools that, when accessed, enrich a story. Symbolism, vivid imagery, and figurative language (i.e., metaphors, similes, allusions, juxtaposition) invite participation and add meaning, likely leaving the reader feeling fulfilled. In the narrative example above, I use imagery to animate the scene when I describe the cat 'lazily curled' on the couch and the 'warm spot' left when he darted away to investigate a noise. Further, I describe a once fashionable sweater as 'worn' and 'faded' and 'wasting away,' with 'snags' and 'stains.' The reader can imagine and visualize, enhancing comprehension and connectivity. Likewise, understanding that the story is an extended metaphor for a bygone friendship may lead the reader to reflect on their own friendships. Meaning is a consequence of a relationship between reader and text. Accurately portraying the emotions of relatable characters is the gateway to empathy, and an empathetic reader is a satisfied reader.

Strategies and Activities for Teaching

In middle school, teachers are primarily moving beyond recounts into writing more complex narratives. As such, the following strategies and activities are relevant to enhancing narrative teaching.

Teach with Examples: Lots of Them

As a middle school teacher, I always begin any exploration of genre using examples, just as I did in this chapter. Often, we read seven or more examples before students are asked to draft anything themselves. I try to make my selections as diverse as the children in my classroom. Exposure to good writing is the first step to engender good writers! Other than excerpts from novels or short stories, these examples could come from previous students, artificial intelligence generation, or even my own writing. I am a teacher, but I am also a writer, and this distinction is crucial when motivating young writers. A teacher's transparent 'writer's life' models the process, the patience, and the purpose of writing in the real world. It creates authenticity, and students are more apt to be vulnerable for a

meaningful task. Using published work as an example, while certainly convenient for busy teachers, can be intimidating to budding writers. Teachers who write with students make writing approachable. Therefore, I recommend that you begin collecting both published and amateur excerpts of strong writing (including your own), especially as it relates to the foundational structural elements and literary tools of narrative.

Once writers have a broad understanding of narrative, I begin to bring in non-examples of narrative. Specifically, I show them two versions of the same plot - one presented as a recount and one presented as a more descriptive narrative, like how I started this chapter. The juxtaposition of the example passages emphasizes the difference in style. As a class, we discuss the difference between the two texts. Naturally, students recognize and appreciate the imagery and embellishment of the narrative.

I then have students annotate each. First, they annotate the narrative for sensory details, literary devices, and character development, three chief traits of a narrative. Once they have identified the relevant author's moves, I ask them to re-read the recount. Commonly, students will more easily recognize a lack of detail. I have each student choose a specific sentence in the recount they believe could be enhanced with more description and depth, and I invite them to rewrite the sentence to give it a more narrative-like quality. More experienced writers might try this activity with an entire paragraph or the recount as a whole, rather than a single sentence.

In addition to the examples above, here are two more texts you might use for this activity. This time, the topic is a lakeside walk. Feel free to borrow and adjust as necessary!

The following is a recount:

> It had been a difficult day, so she wanted to go for a walk on the lakeside, hoping it would make her feel better.
>
> She was about to leave her house, but she couldn't find her keys. She finally saw them - they had fallen off the table behind the cat's food dish. She grabbed them and walked out the door to her waiting car.
>
> She drove to the lake and parked her car in the parking lot. When she got out, she looked in the backseat and saw her jacket. There were some clouds, but there was also sun. The sun had been out most of the day, so she didn't think it would rain.

> Crossing her fingers, she decided not to take her jacket. She walked to the path that would lead her to the lake.
>
> When she got there, she looked at the water. Slipping off her sandals, she held them in her hands and headed down to the beach. The sand was hot. She ran across the hot sand to get to the water quicker. The cool water felt good on her feet.
>
> At that moment she felt a drop of rain, but she didn't have a jacket, so she started to get wet. She was annoyed. The rain began to fall faster. Soon, she was soaking wet, and her feet were caked in wet sand.
>
> The thunder boomed and it made her jump. Another sudden clap of thunder reminded her how sad she was. She gave up. She dropped her shoes and sat on a nearby piece of driftwood. Her wet hair sagged. She sat there sadly until the rain stopped.
>
> After the rain stopped, she got up and walked back to the pathway, taking her shoes with her. She passed a hiker in a raincoat. He smiled and waved.
>
> When she got home, she was happy to change into dry clothes and cuddle on the couch with a warm blanket and her cat. It had not been a good day, but she felt better now that it was over.

And the narrative version:

> She regarded the water. It lapped lazily against the shore. There was nowhere for this water to be. There was also nowhere for her to be. She slipped off her sandals, holding them in her hands, and headed down to the beach.
>
> Her bare feet did not approve. She scurried across the hot sand so as not to further upset the soles of her feet. The water, then, was a welcome relief.
>
> Brushing strands of hair out of her eyes, she regarded the water once more. Birds flew overhead. Through clustered clouds, sunlight glinted. Nearby trees rustled in the breeze. She smiled. It seemed a perfect day.
>
> And she needed a perfect day.
>
> She started walking, letting the water soothe her soul. She didn't make it far before she felt the first drop. *So, the rain that was supposed to miss us, decided to show up after all,* she thought.

> It started slowly, giving her time to adjust to the change. Grumbling, she untied her sweater from her waist and threw it on quickly. Still holding her sandals, she began to jog back to the pathway. Gritty sand flew up her calves. The rain began to fall steadier. Soon, she was wetter than she cared to be.
>
> What happened to her 'perfect day'?
>
> A crack of thunder was her answer. Its suddenness reverberated through her body, forcing her to momentarily freeze in place as the tingles made their way from her ears to the tips of her toes. Which, by the way, were now caked in wet sand.
>
> Another sudden clap of thunder, and she's gone. Lost to the chaos of the storm. The storm that wasn't supposed to come but came anyway. She dropped her shoes and sat wearily on a nearby piece of driftwood, wet tendrils of hair clinging to her cheeks.
>
> The rain soaked her soul, pelting every last bit of peace she had.
>
> Lifting her chin, she opened her eyes to the scene before her. Gone were the peace waves. Gone was the sun. Gone was the gentle breeze. Gone were the birds.
>
> She regarded the water. And she felt alone.

Sentence Structure

Once students have a 'big picture' sense of narrative writing, I focus their attention on the sentence structure of good writing. They now understand *what* traits make quality narratives readable and meaningful. The next step is to understand *how* the words work together to make it that way. To do this we collect data about writing.

First, we evaluate sentence beginnings. I provide students with a short narrative and a highlighter, and I ask them to highlight the first word of each sentence. Once they've highlighted, they look for patterns.

Consider the narrative above, there are 40 sentences. Two words are used more often than others as the first word in the sentence: she and gone. 'She' was used to start eight sentences, and 'gone' was used to start four. Being explicitly aware of that kind of data opens the door to conversations about style. For example, is 'she' used too often? If so, what revisions might you suggest for this writer? Why might the writer have used 'gone' four times in a row? How could you use purposeful repetition in your own writing? What are some

grammatically diverse sentence starters this writer uses (other than a traditional noun or pronoun subject) that could stimulate your own writing?

Next, we attend to sentence length. I invite students to count the number of words in each sentence and make observations. Are the sentences varied lengths? Do the sentence lengths detract or enhance the writing? Why might the author have used a long sentence here and a short sentence there? Does the author use more short sentences, medium sentences, or long sentences? How does the length of a sentence affect the flow and readability of the story? Not only might this activity inspire developing writers, but evaluating sentence length supports literary analysis as students begin to think about how the length of the sentence is influenced by its content.

Collecting data about sentence beginnings and sentences lengths engages the students with the writing in novel ways, leading them to become more purposeful writers and active readers.

Conclusion

In a way that definition, rules, statements, or scientific explanations cannot, story "captures in a special fashion the richness and nuances of meaning in human affairs" (Carter, 1993, p. 6). We use story to make sense of life, "to impose order and coherence on the stream of experience" (Carter, 1993, p. 6). It is how we explain events, solve problems, construct paradigms, and understand ourselves (Carter, 1993). We shape and are shaped by the stories we tell.

Questions:

1. A chronological sequence of events is paramount to a recount, but a narrative may have more structural freedom. Make a list of novels that you have enjoyed that were not chronological and explain how they deviated from a simple chronological retelling.
2. What are the affordances of first-person point of view in a story? What are the limitations?
3. The author encourages teachers to have students read multiple narratives and then compare them to recount. Do you have other ideas about how to have students recognize differences between these two genres of writing?

4. How might you rewrite one of the above recounts or narratives from the perspective of another being, phenomenon, or object mentioned in the story?

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Chapter 4

Integrating a Language-Based Approach to Content Instruction into Civics Lessons*

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Objectives: Educators will be able to…

- Define LACI's 6 Cs of Support.
- Understand the connection between the LACI framework and Systemic Functional Linguistics.
- Evaluate a social studies lesson and suggest improvements that will benefit multilingual learners.
- Identify strategies a teacher could incorporate into their instruction to support ML learners with the LACI framework.

Introduction

A language-based approach to content instruction (LACI) is a teacher education model developed over the past 20 years through research in content area classrooms with teachers of multilingual learners (MLs) (de Oliveira, 2023, 2020). LACI implements a functional approach to language development, emphasizing meaning-making through language. Language is viewed as a meaning-making system used to serve social purposes (de Oliveira & Schleppegrell, 2015). LACI has been implemented in the content areas across K-12 -English language arts, social studies, science, and math (de Oliveira, Braxton, & Gui, 2021).

In this chapter, we showcase the integration of LACI's 6 Cs of support into selected lessons from the grades 9-12 social studies curriculum *Civics for All*, used in New York City. We focus specifically on the C of *code-breaking*, to help teachers implement LACI in civics lessons and explore how this functional approach can enhance the learning of MLs.

* Editors' note: This chapter was double-blind, peer-reviewed prior to online publication.

Literature Review

Social studies include a range of scholastic subjects such as civics, history, geography, economics, anthropology, psychology, and sociology. The primary purpose of teaching social studies is to foster enlightened, proactive, and involved citizens within a culturally diverse democracy (Jaffe & Yoder, 2019).

Civics education concentrates on encouraging people's political involvement within a democratic society (Newman & Chen, 2022). The curriculum expects students to grasp political history and principles, the mechanics of government, and the rights and duties of being a proactive citizen (Newman & Chem, 2022). Civics curriculum is crucial for multilingual learners as it aids in building their civic competence within their new community (Cruz & Thornton, 2009). However, civics courses can be challenging for multilingual learners, particularly those who migrated to the U.S. during their teenage years, due to the content and instruction being very different from what they have experienced from their homeland or family upbringing. Therefore, it is imperative for teachers and educators to seek effective strategies for teaching civics, guarantee quality instruction for all students, and make both content and language learning more approachable for multilingual students.

The academic language demands of social studies expect students to use the complex and abstract vocabulary in the textbooks (Cruz & Thornton, 2009). For example, subject-specific proper nouns, three-or-more-syllable words, derived words, and culturally embedded meanings (Bailey, 2007; Cho & Reich, 2008); the complex verb forms, embedded clauses, and chronological order in social studies materials (Bailey, 2007; Egbert & Simich-Dudgeon, 2001; Thieman et al., 2018). In addition, multilingual learners are expected to deal with issues brought by cultural differences. However, in social studies courses, American culture and social norms are difficult for MLs to understand because they may not have the relevant background knowledge and culture to comprehend some texts (Cho & Reich, 2008; Szpara & Ahmad, 2007).

Approaches that unite the content and language of teaching instruction in social studies include using a genre-based framework in history classrooms (Schall-Leckrone, 2017), having students interpret slogans from documents, and adopting perspective-taking skills via reader's theater (Yoder & van Hover, 2018). Zhang (2017) suggested using noun deconstruction, sentence matching, and text reconstruction to address language demands

like lengthy noun groups, discourse markers, and a variety of embedded clauses in texts. Noun deconstruction involves activities that assist students in understanding the structure of noun phrases. In sentence matching, students draw connections between sentences penned in everyday language and their counterparts in academic language. Text reconstruction requires students to rearrange sentence cutouts to form a coherent and logically flowing paragraph. The language-based approach to content-area reading, such as the functional language analysis (FLA), helped students in history reading (Achugar et al., 2007).

Research on civics teaching and learning found that employing a visual literacy framework can enhance the accessibility of the subject for multilingual learners in high school (Newman & Chen, 2022). For instance, when studying primary written documents, teachers could use graphic organizers to scaffold students' organization of information and sentence frames to assist in verbal expression and written ideas. Moreover, teachers can provide concept maps to direct students' conversations. Additionally, strategies such as political cartoons, historical documents, and visual dictionaries have proven effective in addressing the language demands of civics (Cruz & Thornton, 2009).

No studies introduce ways to integrate a functional approach to language development into existing civics lessons. This chapter will assist teachers in modifying instruction using the LACI framework to improve content and language learning for multilingual learners.

Theoretical Framework

LACI 6 Cs of Support

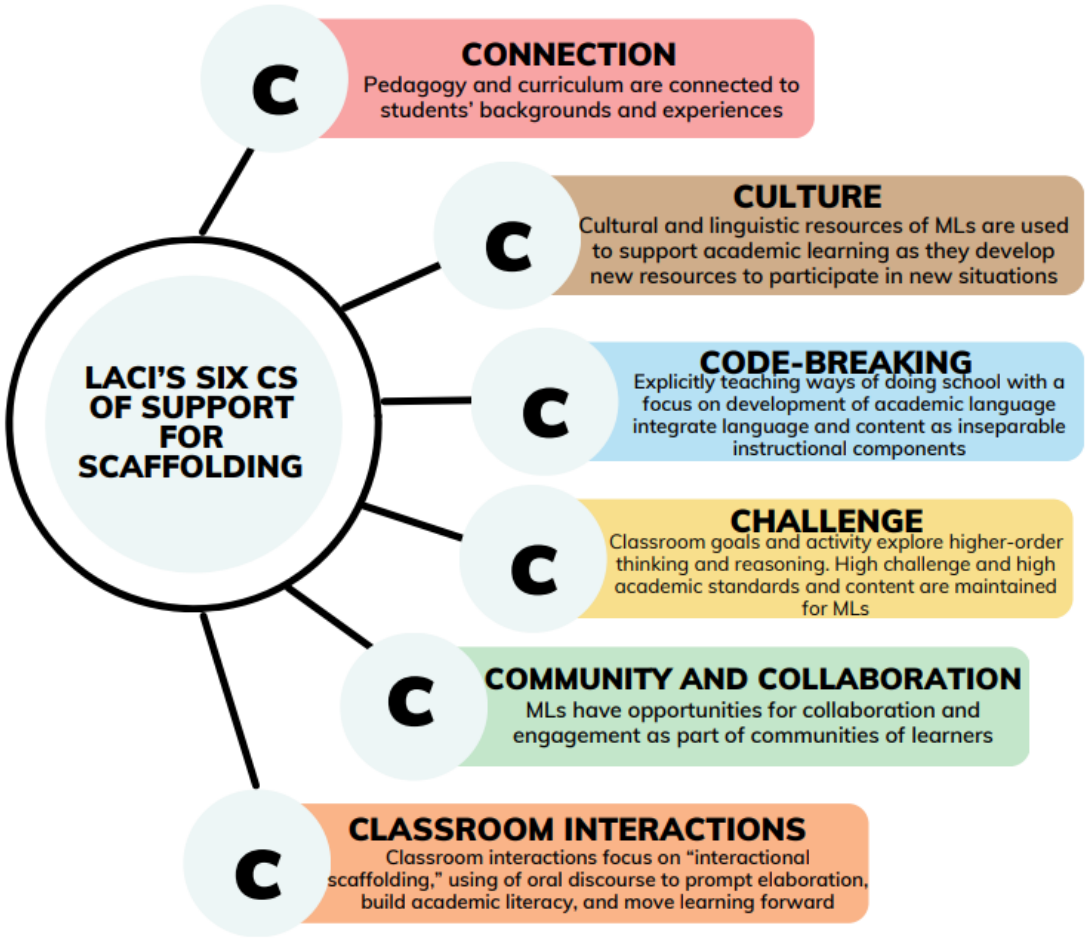
LACI implements a *functional approach to language development,* providing a concurrent emphasis on the creation of meanings (the "content") and the language used to articulate these meanings. When applied in the classroom, this viewpoint puts an emphasis on the subject matter and supports teachers in understanding how language is utilized to create knowledge across disciplines. LACI, therefore, supports three Big Ideas of the WIDA 2020 Standards (WIDA, 2020): A functional approach to language development, content and language integration, and equity of opportunity and access.

LACI encompasses six core principles to scaffold MLs during classroom instruction (see **Figure 1**). The *C of connection* involves teachers utilizing strategies to connect various components of the content and curriculum to students' prior knowledge and experiences. The *C of culture* allows teachers to establish connections between new content skills and

concepts to cultural and linguistic resources of multilingual learners. The *C of code-breaking* involves intentionally introducing ways of doing school, academic language, and disciplinary, linguistic, and cultural codes associated with learning the content (Fang, 2006; Schleppegrell, 2001, 2004). The *C of challenge* refers to setting classroom objectives and activities that encourage higher-order thinking and reasoning while providing both high challenge and high support for multilingual learners. The *C* of *community and collaboration* component emphasizes the creation of communities, collaborative work, and the involvement of students and teachers working together to generate knowledge. The *C of classroom interactions* focuses on utilizing interactional scaffolding moves, employing oral discourse to elicit elaboration, prompt academic literacy, and advance learning.

Figure 1.

LACI's Six Cs of Support for Scaffolding Content Area Instruction for Multilingual Learners (Adapted from de Oliveira, 2023, used with permission from de Oliveira, 2023)



LACI's Teaching and Learning Cycle

LACI's Teaching and Learning Cycle, also known as LACI's TLC, is an instructional framework that supports the development of academic language for multilingual learners. It encompasses various elements such as academic discussions, sustained reading, specific tasks, and writing. By using the 6 Cs of support, LACI's TLC assists teachers in designing effective instruction using a genre-based approach grounded in systemic functional linguistics (SFL) for multilingual learners (de Oliveira, 2023). LACI's TLC provides guidance for students through six phases:

In the Building Shared Knowledge of the Topic phase, teachers engage students by posing relevant questions pertaining to the subject that will be explored in various activities. The aim is to assess the students' existing knowledge or gaps in understanding regarding the topic and begin establishing shared understandings. In this phase, the C of connection and the C of culture are frequently employed, as teachers establish connections with students' prior experiences and incorporate their cultural backgrounds into the classroom.

The objective of the Sustained Reading phase is to guide students as they engage in focused reading of specific texts. This phase is designed to enhance students' understanding of the topic. During this phase, teachers may incorporate the C of challenge by selecting reading materials that present a level of difficulty, thereby providing students with an opportunity to rise to the challenge and expand their knowledge.

During the Deconstruction phase, teachers employ modeling and analysis techniques to break down mentor texts of a particular genre. This involves examining the language functions and features of the texts together with the students. Typically, teachers incorporate the C of code-breaking and the C of classroom interactions during this phase to effectively explore and understand the complexity of the texts.

In the Joint Construction phase, teachers collaborate with students to collectively construct a text in the same genre as the mentor text. This collaborative process involves the teacher utilizing the C of challenge, C of connection, and C of code-breaking principles. The objective is to provide a challenging experience for students with scaffolding, establish connections between the text being constructed and their prior knowledge, and intentionally introduce and navigate the language and content associated with the genre.

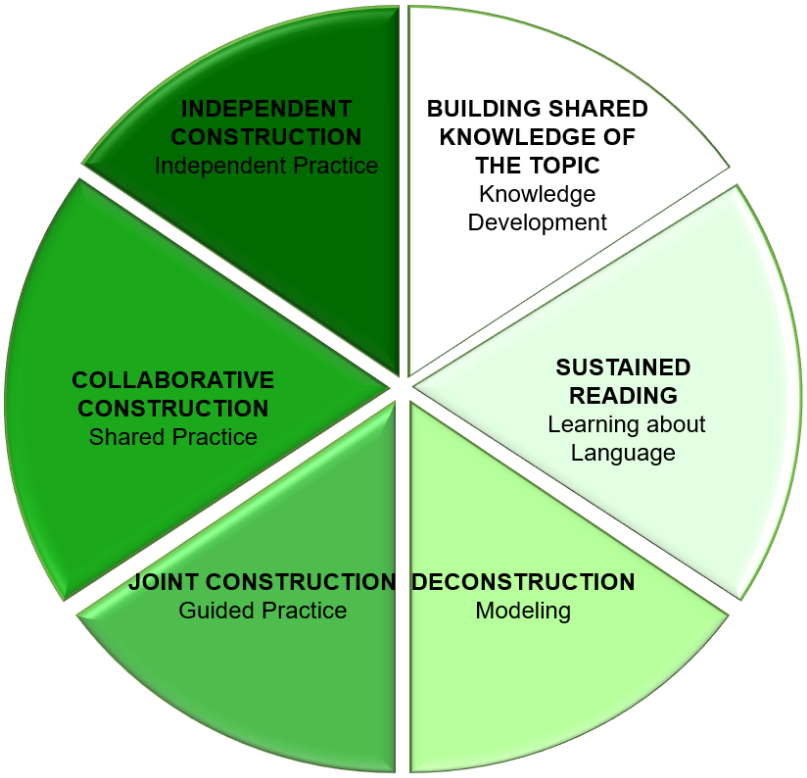
The Collaborative Construction phase presents a great chance for students to cooperate with peers to create a new text. This stage includes the C of Community and Collaboration.

During the Independent Construction stage, students should be ready to work on their individual texts, demonstrating the C for Challenge.

LACI's TLC is a valuable framework for lesson design. It allows teachers the flexibility to choose the phases they require. This adaptable framework supports teachers in designing strategies that best address the needs of MLs and incorporate further scaffolding approaches. TLC proves to be useful for examining lesson plans as it directs the teachers to explore various stages of existing lesson plans. Moreover, this framework is not just confined to analysis texts but extends to understanding concepts and activities.

Figure 2.

LACI's Teaching and Learning Cycle (Modified from de Oliveira, 2023)



Method

Context

The lesson plan that we analyzed is developed and used by the New York City Department of Education (NYCDOE). We got access to some teaching resources on social studies in NYCDOE attributed to Dr. de Oliveira's collaboration with NYCDOE's Division of Multilingual Learners. The NYCDOE is the biggest school district in the U.S. In academic year 2021-2022, it was reported that 42% (equating to 349,000) of students in New York City public schools primarily communicated in a language other than English in their homes (New York City Department of Education, 2022).

Civics for All

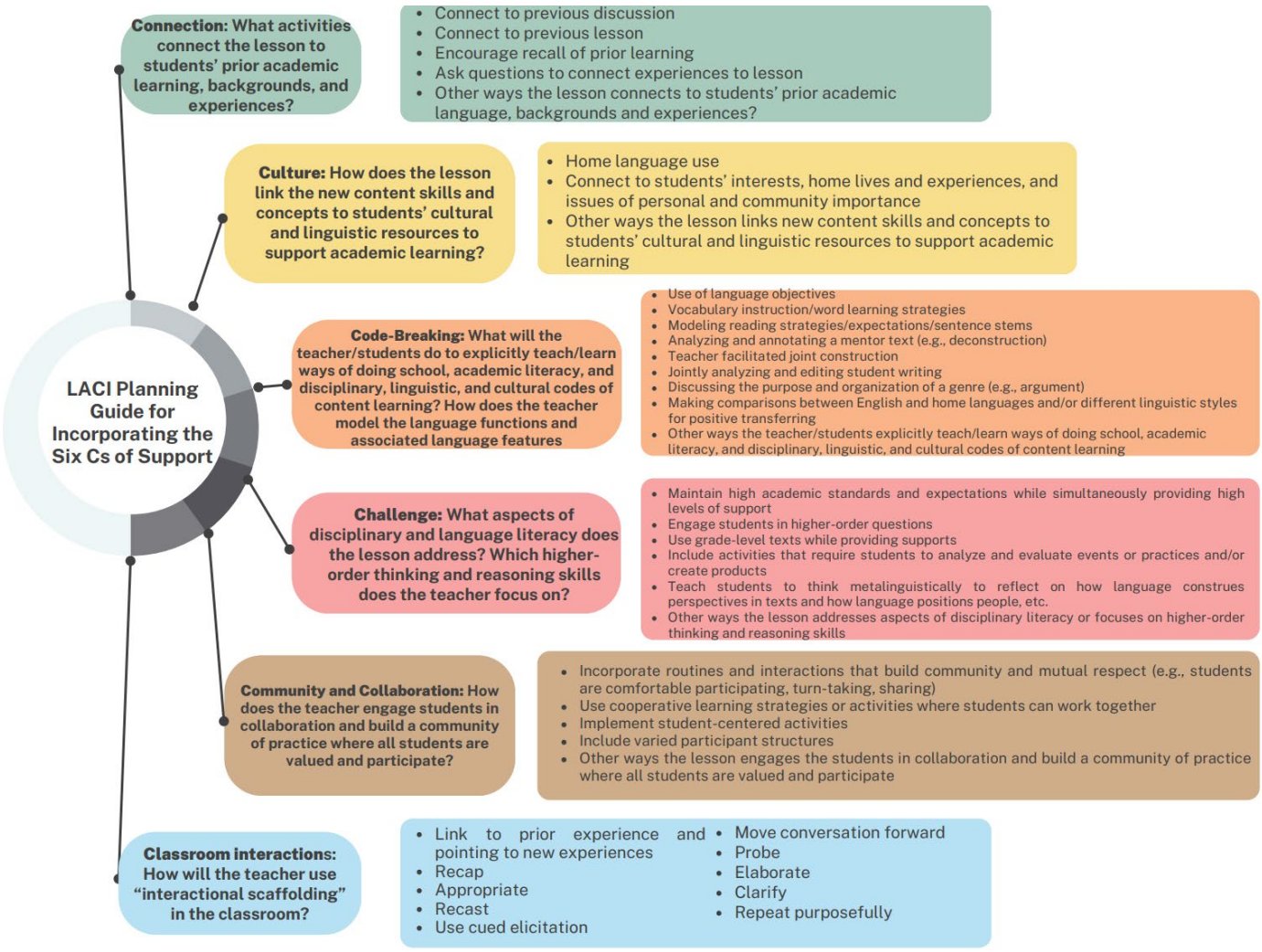
The lesson plan is from Civics for All, a comprehensive K-12 civics curriculum employed in New York City. It complements the NYCDOE's Passport to Social Studies curriculum but is crafted to be flexible across diverse settings to satisfy the needs of all NYCDOE schools. Passport to Social Studies is the main curriculum utilized in social studies teaching in NYCDOE. The primary goal of the Civics for All curriculum is to ensure top-tier civics teaching and civic participation prospects for every student. It provides a broad range of resources, educational materials, professional development, and student-facing programs to all schools under the NYCDOE (Civics for All Curriculum Guide, 2023).

Analysis

Drawing on LACI's 6 Cs of Support and LACI's TLC, we used **Figure 3** *LACI Planning Guide for Incorporating the Six Cs of Support,* and **Figure 2** *LACI's Teaching and Learning Cycle* to analyze the lesson plan. The LACI planning guide, grounded on LACI's 6 Cs of Support, is designed to assist teachers in identifying opportunities within the curriculum and instruction that can enhance the language development and content learning of MLs.

Figure 3.

LACI Planning Guide for Incorporating the Six Cs of Support (Adapted from de Oliveira, 2023, p. 201)



In **Figure 3** above, the middle rectangles present the questions of each C that can help teachers have a better understanding of each C and what they should be looking for while planning the lessons. The big rectangles to the right list examples of each C to aid teachers in recognizing or planning the Cs in the lesson plan. The figure can assist teachers in determining which C is absent and needs to be incorporated based on the lesson's objectives and the given lesson plan. Suggestions can be added if necessary. There might be instances where the existing lesson plan already incorporates the Cs, but they require enhancement to make the instructions more efficient and understandable for students. It is important to note that not every C is mandatory for each lesson plan or various stages of the lesson plan.

After determining where in the lesson plan the Cs should be incorporated, we completed **Table 1** (as shown in **1.a**.), LACI's 6Cs Integration into Lesson Plans. The middle

column of this table showcases the content and sequences derived from the existing lesson plan. The suggestions for the integration of LACI's 6Cs support are listed in the left column. The right column is for additional resources that can support the integration of the Cs.

Table 1.

LACI's 6Cs Integration into Lesson Plans

Suggested Scaffolds	Grade Level: Unit: Lesson: Lesson Objective: Resources/Materials:	
LACI 6Cs Integration	Introduce the Lesson/Motivate Student	Additional Resources
Model/Teach		
Group Work/Independent Work		
Assessment/Wrap-Up		

Findings

The lesson plan is from Civics for All Grades 9-12, Part I. It teaches students about birthright citizenship and the endeavors made by individuals and the Supreme Court to safeguard this right. The teaching resources cover the Fourteenth Amendment to the U.S. Constitution, the video of United States v. Wong Kim Ark, and the accompanying Wong Kim Ark Viewing Guide.

Table 1.a.

LACI's 6Cs Integration into Lesson Plan

Suggested Scaffolds	Grade Level: 9-12 Lesson: 2 Individuals, the Courts, and Birthright Citizenship Lesson Objective: Students learn about birthright citizenship and the efforts of a single individual and the Supreme Court to secure this right. Resources/Materials: *Fourteenth Amendment to the United States Constitution; United States v. Wong Kim Ark* video; *Wong Kim Ark Viewing Guide*	
LACI 6 Cs Integration	Introduce the Lesson/Motivate Student	Additional Resources
Code-Breaking The teacher should explain birthright, citizenship, and immigration to students, and provide real-life examples to help students better understand these concepts and their relationships. **Connection**: Connect to the previous unit **Rights v. Responsibilities** and connect to students' own experiences with immigration.	Facilitate a discussion using the following questions: -- What is birthright citizenship? -- What have you heard about birthright citizenship in the news? • Explain that birthright citizenship is the guarantee of American citizenship to all individuals born on American soil. Today, it is often tied to issues of immigration and citizenship and is a right that is often debated. • Continue the discussion with the following questions: -- Why do you think this right is often debated? -- What are the implications of this right in defining what it means to be an American? • Explain that much of the history of this right has to do with the efforts of one man who used the power of the courts to secure birthright citizenship for himself and others. Today, we will learn about this	How to Connect ELLs' Background Knowledge to Content

	right and also about how individuals can use the courts to make change.	
	Model/Teach	
LACI TLC Deconstruction: The teacher should unpack the 14th Amendment with students, help students to pay attention to the language features while deconstructing the meaning of the Amendment. **Culture**: Provide translation of Fourteenth Amendment in students' home language as needed. **Challenge**:	Display the *Fourteenth Amendment to the United States Constitution.* • Ask the following questions: -- What does this Amendment say? -- What rights does it describe? • Explain that this Amendment was passed after the Civil War and was mainly designed to extend citizenship to the formerly enslaved. As immigration expanded in the United States, this guarantee of birthright citizenship was called into question. Many people believed that undocumented immigrants or immigrants from certain countries should never be allowed to become citizens, even if they were born on American soil. –The Supreme Court of the United States (SCOTUS) is the highest court in the nation and hears a select number of cases each year. SCOTUS has the ability to interpret Constitutional Amendments. This is called judicial review. – The Chinese Exclusion Act was the first federal regulation on immigrants in American history. It was written into law in 1882 and severely limited the entry of Chinese immigrants into the country. Most people who managed to enter the US from China were considered having done so in violation of the law.	LACI Teaching and Learning Cycle figure in *Teaching Young Multilingual Learners: Key Issues and New Insights*. (Oliveira & Jones, 2023, p.14) The Home Language: An English Language Learner's Most Valuable Resource

Add higher order thinking questions: "Are there any limitations or controversies you can think of related to the Fourteenth Amendment?" "How do concepts from the Fourteenth Amendment compare to laws and practices in your home country or other countries you know about?" **Code Breaking:** Model expectations and provide sentence stems for the viewing guide Part 1 task	• Explain that students will watch a short film on the Supreme Court case United States v. Wong Kim Ark and complete a viewing guide for that film. • Distribute and review the Wong Kim Ark Viewing Guide. • Explain that the class will view the short film two times. On the first viewing, students should just watch and on the second viewing they should watch and take notes to answer the questions in Part 1 of the viewing guide.	
Group Work/Independent Work		

Community and Collaboration: Ask students to check on each other's answers to Part 1 before having them discuss Part 2. Students get a good opportunity to learn from each other, ask specific questions and find common misunderstand-ings so that the teacher can resolve the problems with the whole class after the group activity. **Classroom Interactions:** After students complete Part 1, the teacher should go over the answers with students as a class	Play the *United States v. Wong Kim Ark* video and watch twice. • Have students complete the questions in Part 1 of the *Wong Kim Ark Viewing Guide*. • Bring the group back together and explain that you are going to show the video one more time. This time, students should listen for answers to the questions they have not yet addressed and/or listen for additional information they may have missed during the initial viewing. • After the second viewing, organize students into groups. • Have student groups discuss and complete Part 2 of the *Wong Kim Ark Viewing Guide*.	Interactional Scaffolding Moves

as some of the questions in the Part 1 handout could be challenging. While checking on students' answers, the teacher could use interactional scaffolding moves to elicit or expand students' answers. **Code Breaking**: As the questions in Part 2 are getting challenging, the teacher should model expectations for the viewing guide Part 2 task, and provide sentence stems if needed.		
Assessment/Wrap-Up		
Classroom Interactions: While facilitating the discussion, use	Facilitate a discussion of student responses to Part 2 of the *Wong Kim Ark Viewing Guide*. • Explain that birthright citizenship, like many rights, is constantly being debated. The Supreme Court has not changed its stance on birthright citizenship since the Wong Kim Ark case, but that does not mean they	

interactional scaffolding moves such as "recapping," "recasting," and "cued elicitation" to build student capacity to complete the activity in groups. **LACI TLC Joint Construction**: The teacher should adopt joint construction to facilitate students' response to the debrief (**Community and Collaboration**).	could not provide a different interpretation in the future. • Facilitate a debrief by posing the following questions: -- How does this change or inform their understanding of their individual rights? -- What is good or bad about the Supreme Court's power over the Constitution and related rights? (Civics for All, Grades 9-12, Part I, pp. 90-92)	

In the Introduce the Lesson/Motivate section, students are introduced to birthright citizenship and its pivotal role in delineating the definition of being an American. To better help students understand some unfamiliar concepts and their relationships, the teacher should explain birthright, citizenship, and immigration to students (Code-Breaking) and provide real-life examples (Connection). Then, the teacher can ask questions to connect to the previous lesson *Rights v. Responsibilities* (Connection). For example, "Can someone

explain how the rights we discussed in our last lesson might relate to an individual's birthright citizenship?", "How might our discussion about rights and responsibilities impact the way courts decide on issues related to birthright citizenship?", "How can the concepts of “rights” and “responsibilities” that we learned in the previous lesson influence an individual's behavior and attitude towards their birthright citizenship?", or "Based on what we learned about rights and responsibilities, how would you predict the courts handle disputes related to birthright citizenship?". These questions can help students to draw on their understanding from the previous lesson and apply it to the new topic, facilitating deeper learning and comprehension. The teacher can also try asking questions that connect to students' own experiences with immigration (Connection). For instance, "Does anyone have a personal or family story about immigration they'd be comfortable sharing? How did your rights and responsibilities come into play in this experience?", "How has the concept of birthright citizenship affected you, your family, or someone you know?", or "How have you seen the rights and responsibilities we discussed in our last lesson applied in your own experiences with immigration?". However, teachers should pay attention to the fact that these questions may touch on personal and potentially sensitive topics. It is important to approach this discussion with respect and empathy, allowing students to share only if they feel comfortable doing so.

In the Model/Teach section, students are introduced to the Fourteenth Amendment of the U.S. Constitution and its aim to grant citizenship to those previously enslaved. The quality of instruction could be enriched if the teacher applied the Deconstruction phase of the LACI’s TLC. Given that the Fourteenth Amendment is a primary written source, it might pose challenges for multilingual learners. It would be beneficial if the teacher deconstructs the text with the students (Code-Breaking and Classroom Interactions) and assists them in focusing on the language features and functions while interpreting the Amendment. Furthermore, the teacher should offer translations of the Fourteenth Amendment in the student’s native language as necessary (Culture). There are official translations of the U.S. Constitution in many languages, and they are easy to access online. The teacher should also create a high-challenge and high-support classroom by adding some higher-order thinking questions while learning the 14th Amendment. For example, “Are there any limitations or controversies you can think of related to the Fourteenth Amendment?" This question helps students to evaluate and critique the Amendment. Another question could be, “How do concepts from the

Fourteenth Amendment compare to laws and practices in your home country or other countries you know about?" Model expectations and provide sentence stems for the viewing guide Part 1 task is necessary (Code Breaking) as MLs may miscomprehend some questions on the task sheet.

The Group Work/Independent Work section introduces the Supreme Court case of United States v. Wong Kim Ark, which has ties to the topic of birthright citizenship. Before having students discuss Part 2, the teacher should ask students to check on each other's answers to Part 1. Students get a good opportunity to learn from each other, ask specific questions, and find common misunderstandings so that the teacher can resolve the problems with the whole class after the group activity (Community and Collaboration). Following the completion of Part 1, the teacher should go over the responses as a group, since some of the questions in the Part 1 handout might be difficult. In the process of evaluating students' answers, the teacher could leverage interactional scaffolding moves to develop students' responses (Classroom Interaction). Given that the questions in Part 2 of the Wong Kim Ark Viewing Guide are increasingly demanding, the teacher should exemplify the expectations for answering the tasks in the viewing guide Part 2 (Code-Breaking) and offer sentence stems if necessary.

The Assessment/Wrap-Up segment seeks to involve students in a conversation about the continuing contention over birthright citizenship, and the Supreme Court's authority to interpret the Constitution and associated rights. While facilitating the discussion, the teacher should use interactional scaffolding moves such as "recapping" (teachers provide a concise recap of the key aspects of the interaction), "recasting" (teachers reframe students' comments into discourse suitable for an academic context), and "cued elicitation" (teachers provide clear cues, such as verbal or body language hints, to indicate expected responses) to build student capacity to complete the activity in groups (Classroom Interactions). Another enhancement of this section is to employ joint construction to aid students in their responses to the debrief.

Conclusion and Recommendations

This chapter showed how teachers could integrate the Cs into the existing civics lesson plan. Reflecting on the analysis, we have some recommendations for civics teachers when teaching civics with the LACI framework (see **Figure 4**). It can be used for teachers who

want to implement LACI into existing lesson plans or design the lesson with the LACI framework.

Concepts

When teaching the lesson with new concepts to students, think about the principles of the *Code-Breaking* and *Connection*. You can explain the new concepts by offering real-life examples and asking questions that connect to students' life and home culture.

Texts

When you teach civics texts, especially the primary written sources, make sure you use the LACI's TLC Deconstruction (Code-Breaking) phase to unpack the text and pay attention to the language features and functions. The *Culture* should also be considered here. For example, the teacher can provide translation of the text for MLs in their home languages. Taking the 14th Amendment as an example, the teacher can choose to provide a complete translation of the text, an annotated version of the text with translations, explanations, and context for specific phrases or sections, after having students read the English version. They may also provide translations at different phases of the lesson, for example, when introducing the historical context and key concepts in students' first languages before reading the text; identifying and translating crucial sections and legal terms that are central to understanding the Amendment's meaning and implications while reading the text together; providing translations as necessary during class discussions and analysis to ensure all students can participate and contribute. However, the *Culture* is not limited to translation, and the teacher should incorporate translanguaging strategies to make good use of students' full linguistic repertoires (García et al., 2017).

Tasks

When students are expected to complete task sheets, the teacher should always keep the *Code-Breaking* in mind. For example, model expectations and provide sentence stems to students for full support and scaffolding, as the description of the tasks and questions on the sheets could be challenging to MLs. Colorín Colorado and Everything ESL are two good online websites that provide sentence starters and stems tailored for various subjects and language proficiency levels.

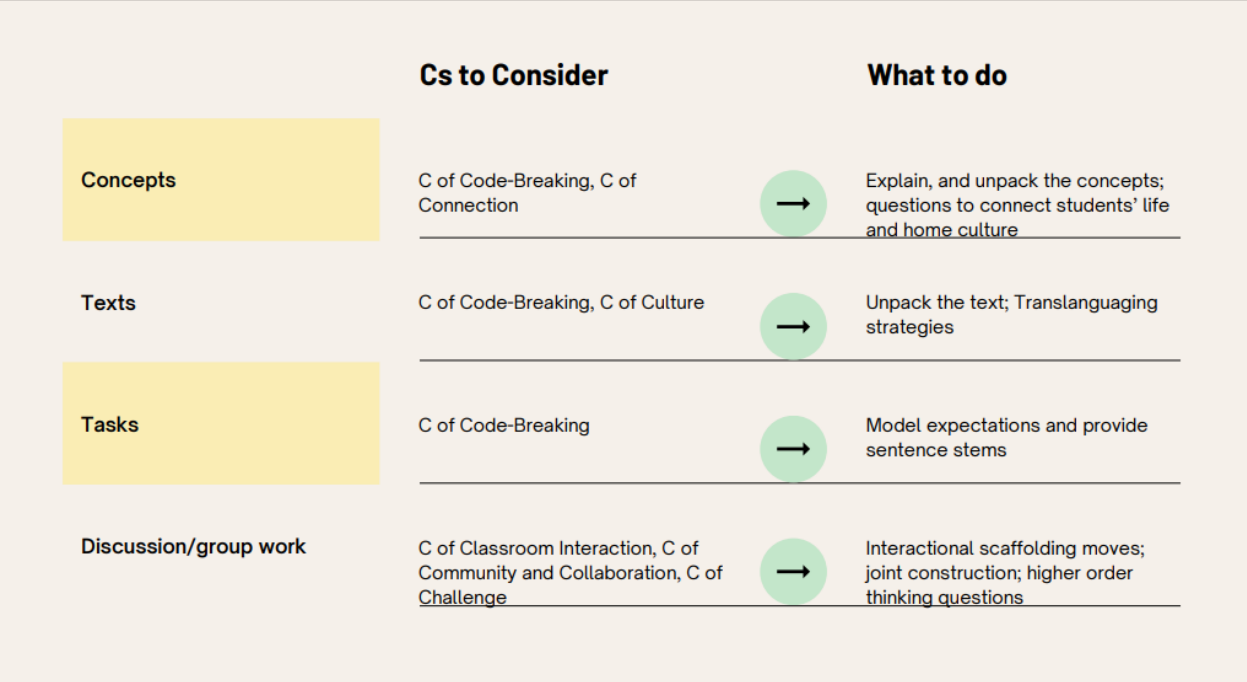
Discussion/group work

For discussion and group work, the *Classroom Interaction*, the *Community and Collaboration*, and the *Challenge* should always be considered. To enhance conversation and support

students in completing the group activity, the teacher can employ interactional scaffolding moves such as "recapping," "recasting," and "cued elicitation." These interactional scaffolding moves aim to develop students' ability to engage effectively in tasks. Besides, the teacher can use the joint construction phase (Community and Collaboration) to scaffold students' responses to the discussions. Lastly, besides encouraging students to practice oral and written expression, the teacher should add higher-order thinking questions to enhance multilingual learners' critique and evaluation skills.

Figure 4.

Teaching Civics with LACI Framework



Questions:

1. How do the Cs of Support align with what you already know about scaffolding for multilingual learners?
2. Summarize LACI's Teaching and Learning Cycle.
3. How does the LACI framework implement a functional approach to language development, one of WIDA 2020's Big Ideas?

4. Which C of Support would you be able to incorporate in your own instruction most easily? Which C of Support would take you more time to utilize? Why?
5. Find an example of a social studies text that would benefit from deconstruction. Describe how you would do LACI with multilingual learners.
6. How might you use audio, such as music or sound, to support the integration of the 6 Cs?

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Chapter 5

A Functional Approach to STEAM: Teaching to Argue about Sound*

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Objectives: Educators will be able to…

- Understand functional language its benefit to the process of learning content and language.
- Relate the genre of argumentation and critical thinking instruction to the STEAM movement.
- Analyze an original lesson about sound waves for its existing language supports as suggested by the LACI framework.
- Revise an existing lesson to incorporate the LACI framework and offer explicit language instruction and scaffolding for all students.

Introduction

The functional-language approach requires students to develop arguments by providing evidence for their stances from various sources (Kang, 2022). For multilingual learners, this can be challenging as the typical design of textbooks and other media tend to present information once, in one format, and not continue to review the material in subsequent sections. In addition, teachers may assume that students are equipped to draw upon prior coursework to offer these arguments, but due to language differences or abilities, this may not be an easy or equitable task without scaffolding (Harper & de Jong, 2004). Scaffolding strategies are elements of teaching and learning cycles that guide teachers and students during their trajectory of learning (MacDonald & Crowther, 2023). Teachers incorporate these enhancements for a more equitable approach by using various tools such as graphic organizers, digital media, and artificial intelligence technologies. Such applications

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can provide students with multimodal opportunities to expand their linguistic repertoires in courses, especially those in the content areas of Science, Technology, Engineering, Arts, and Mathematics (STEAM).

STEAM courses are starting to be recognized for possessing useful strategies and approaches to connect and relate to diverse student populations (Park, 2021). This is important to draw upon because these subjects often require active student engagement and participation in order for the content to resonate with all students. As teachers continue to promote engagement, interaction, and language use in STEAM learning environments, it is critical that functional language awareness be recognized as a necessary component for multilingual learners (MLs), in particular, while ensuring that they are able to thrive in these classrooms (Hansen-Thomas & Langman, 2020). "STEAM education takes a guided-inquiry approach to creatively investigate scenarios that exist in real and hypothetical situations, involving cultural, linguistic, and social aspects of the arts" (Park, 2021, p.587-588). As such, these courses may provide students with the opportunity to become more motivationally and linguistically engaged in the content through "creative, critical, and constructive means" (p.590).

This chapter will analyze a sample high school physics lesson plan that explores the Next Generation Physics standard (HS-PS4-1), "Use mathematical representations to *support a claim* [emphasis added] regarding relationships among the frequency, wavelength, and speed of waves traveling within various media" (NGSS Lead States, 2013). As the verbiage "support a claim" inherently points to the macrogenre of argument, understanding argumentation is key to this standard. Thus, the LACI framework's adaptation of the Teaching and Learning Cycle (de Oliveira, 2017) will be used to assess and amplify the integration of language scaffolding for all learners and incorporate literacies that are present across various STEAM content areas. This chapter also will emphasize various techniques to ensure that attention to language is not lost in content, while keeping multilingual and dually identified students in mind. Operating under the premise that "teachers must use language to teach content, rather than using content to teach language" (p. 44), language cannot be an afterthought, but instead, an integral and integrated part of STEAM content instruction.

Current Content Frameworks & Argumentation

In 2006, the Organisation for Economic Cooperation and Development (OECD) released a framework document for the international PISA exam that prioritized three competencies for scientific literacy: identifying scientific issues, explaining phenomena scientifically, and using scientific evidence. The authority continues that one of the cognitive exercises embedded in these competencies is "constructing and communicating arguments and explanations based on data'' (p.29). More recently, OECD released a revised PISA framework (OECD, 2018) with the slightly revised competencies of "explaining phenomena scientifically; evaluating and designing scientific enquiry; and interpreting data and evidence scientifically" (p.99). The latter component requires "Analysing and evaluating data, claims and arguments in a variety of representations and drawing appropriate scientific conclusions" (p.101) – a more detailed connection to argumentation. Within the United States, the National Research Council (NRC; 2012) has outlined within the Next Generation Science Standards (NGSS) eight science and engineering practices that students are to learn across all grade bands:

1. Asking questions (for science) and defining problems (for engineering)
2. Developing and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Constructing explanations (for science) and designing solutions (for engineering)
7. Engaging in argument from evidence
8. Obtaining, evaluating, and communicating information.

As explicitly noted in Practice 7, argumentation is a primary practice that is also supported by Practice 4 and Practice 8 (Erduran et al., 2015) – the combination nodding to Toulmin's argumentation model of claim, data, and warrants (1958/2003).

The premises of these national and international frameworks point to more sociocultural and constructivist approaches for twenty-first science learning that values students' meaning-making abilities more so than the recitation of technical facts (Scott & Mortimer, 2005). Thus, the definition of *scientific knowledge* has expanded from a more authoritarian-developed schema to be a more empowering "something which is constructed

through a process of justifying beliefs through reasoning, conjecturing, evaluating evidence, and considering counter-arguments" (Osborne, 2005, p.368). Later Osborne (2006) continues that argumentation in school science has the capacity to:

a) improve students' conceptual understanding of science;
b) enhance their ability to reason and think critically;
c) develop a deeper understanding of the nature of belief in science; and
d) to make the quality of the learning environment and learning experience more enjoyable. (p.4)

With these possible outcomes, the impetus for creating the NGSS (NRC, 2012) – namely, ensuring that every American citizen has a basic understanding of science and engineering – seems more attainable by incorporating explicit instruction of argumentation.

The focus on language structures within the NGSS (NRC, 2012) can be directly linked to the Standards for Literacy in History/Social Studies, Science, and Other Technical Subjects, which is included with the Common Core State Standards (CCSS) for English Language Arts (NGACBP/CCSSO, 2010a). These six language standards relate to conventions of standard English, knowledge of language, and vocabulary acquisition and usage within core subjects in humanities and beyond, emphasizing that students must gain control over standard English grammar, usage, and mechanics. In addition, it is expected that students become proficient with ways to convey meaning effectively, determine the meaning of words encountered from engaging with media, appreciate non-literal meanings, and expand their vocabulary. Specified in the Mathematics standards (NGACBP/CCSSO, 2010b) are also eight Standards for Mathematical Practice (SMP):

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning (p.6-8)

Note that SMP #3 also target the function of argumentation – both constructing and analyzing them. The expectation is that students will be able to "understand and use stated

assumptions, … make conjectures and build a logical progression of statements … analyze situations by breaking them into cases, … recognize and use counterexamples… justify their conclusions, communicate them to others, and respond to the arguments of others" (p.6), among other associated argument skills. Thus, it is imperative that all STEAM teachers be aware of the general features of argument, but also the specific attributes of this macrogenre within their subject areas.

To assist in the distribution of pedagogical practices for argument, WIDA's English Language Development Standards Framework (WIDA, 2020) explores this function and several others as a part of its Big Ideas for all content areas across the K-12 continuum. According to this latest edition of the Framework, these "*Key Language Uses* [emphasis added] describe prominent ways that language is used in school, across all disciplines. When educators make choices about how to integrate content and language, the Key Language Uses can help provide focus and coherence" (p.23). WIDA posits that through integrating this functional approach to language instruction across subject areas, multilingual learners will be able to expand their linguistic repertoires, becoming increasingly aware and strategic in their use of language to negotiate meaning and achieve their purposes in various contexts" (p.20).

Scaffolding & Language

The WIDA Standards have historically been based upon the notion that "Educators should scaffold learning and resources across all levels of language proficiency" (WIDA, 2020, p.31). The Consortium continues by offering a working definition for scaffolding:

> a contingent, collaborative process of supporting student development of new skills, concepts, practices, and understandings to build student autonomy by providing the needed kind of support that will trigger agency. Unlike a fixed, "one size fits all" set of routine supports, scaffolding starts with high expectations for all students and provides them with high support so they can rise to that challenge and perform tasks independently over time. (p.249)

All of this is predicated upon Vygotskian sociocultural theory; more specifically, the zone of proximal development, wherein someone or something external to a person can be used to enable them to achieve the next level or stage of learning (Vygoysky, 1978). Thus, in a given lesson, scaffolding may pull upon the tenets of UDL (CAST, 2018) for multiple means of engagement, representation, action, and/or expression. It may also appear in the

organization and pacing of a lesson, as demonstrated in Echevarria et al.'s SIOP Model (2018). In addition, scaffolding may be developed as a result of data-informed analysis methods wherein student performance data is reviewed, but also context is continuously considered for the improvement of students' teaching and learning experiences and achievement (WIDA, 2020).

Hammond and Gibbons (2005) expand the definition of scaffolding to not just be "designed-in" classroom structures as previously noted, but also interactional experiences. These features tend to be spontaneous and may include more personable occurrences such as linking to background knowledge based upon home environments, making home/school connections, summarizing, and appropriating. For the latter, teachers may integrate students' contribution into the discourse of the class and/or, in turn, students may incorporate teachers' instruction into their own discourse. The result of student appropriation tends to be that their communications become more "registrally appropriate" (p.22), allowing for students to be co-participants in their learning and progress in the desired language acquisition. Thus, interactional scaffolding can be linked directly to Swain's theory of comprehensible output (2005), wherein students are able to demonstrate their linguistic knowledge by "attempting to produce the target language" (p.475). Within this process, pupils begin by *noticing* the differences in characteristics of the target language, then *hypothesizing* about what they would like to utter and attempting to do so, and finally *reflecting* upon the accuracy of their communication based upon the responses of peers or teachers with whom they are engaged.

In order to be successful in school, we understand that students need to be able to comprehend and produce language for specific purposes such as "explaining, arguing, recounting, and describing across a range of subject areas in a variety of media and modes" (Derewianka & Jones, 2016, p.2). Thus, it is imperative that content teachers have a firm understanding of how language operates in their subject areas. Regarding content and language integration, Marks and Mousley (1990) purport, "If teachers are not going to focus only upon the recount genre but develop and extend students' expertise into those areas of communication which are vitally important to mathematicians in a wide variety of occupations, it will be necessary for them to come to grips with the range of genres used in mathematics." However, this viewpoint easily extends into all subject areas – we must become fluent in the ways that language operates in each content area in order to teach our students, especially MLs, to do the same. Systemic functional linguistics (Halliday, 1978) and more

specifically, the functional approach, allows for the interrogation of language in each content area in order to determine structures that can be taught to pupils and enable them to develop fluency in the particular area of academic language as well. This approach may be helpful to all students, but it is critical to the educative experiences of MLs (Blankman, 2021).

LACI & Argumentation

A functional approach to language development offers "a simultaneous focus on the meanings that are made (the 'content') and the language through which the meanings are expressed" (de Oliveira, 2023, p.4). Whatever content or content area is being studied, MLs are exposed to challenges which cannot be taken for granted. The challenge in content areas is largely linguistic, "more than just vocabulary" (p.3), as MLs must comprehend and critically evaluate texts, and participate in complex discussions. The language that learners have contact with in schools is the so-called academic language which is considered a "second language," even for English native speakers. Academic language seen in textbooks includes content-specific vocabulary, multisemiotic systems and terminology, and dense noun phrases and sentences, among other characteristics; and it becomes more complex through the grades (Lemke, 2003; Schleppegrell, 2007). Research has shown that academic language is constructed differently from everyday language and these differences already appear at elementary school levels (e.g., de Oliveira, 2023). Therefore, it is vital to identify language demands early and provide MLs meaningful interaction opportunities with explicit attention to language.

Concerning argumentation in science classrooms, challenges are also invariably present. According to Faize et al. (2018), argumentation should play a central role in science education, as part of a student-centered approach. Scientific argumentation in science can enhance conceptual understanding and develop critical skills, it can also lead to confrontations among students with different beliefs or limited prior knowledge. The nature and role of argumentation in science education differs significantly from its everyday use. For instance, instead of being a heated exchange of views, scientific argumentation is a logical and rational discourse aimed at understanding the relationship between ideas and evidence, and it involves the development, evaluation, and validation of scientific knowledge. The crux of this process involves making a claim, refining it, and then supporting it with scientific evidence. As such, students need specific abilities to effectively participate in scientific

argumentation, including understanding and utilizing a conceptual framework, using correct epistemology for evaluating a claim, and the ability to construct and communicate knowledge as a social interaction process.

Involving students in scientific argumentation emphasizes the need for normalized dialogic interaction and collaborative reasoning in argumentation (Faize et al., 2018). Methods to achieve these environmental characteristics include providing a suitable and stimulating learning environment, clear instructions about the structure of an argument, and encouraging critical thinking and questioning. With the main goal of argumentation being to support one's position while identifying and exploiting weaknesses in that of an opponent, it functions in education in both structural and dialogic contexts. In a structural context, there are particular discourse components that are distinct from explanation; "they [argument texts] are structured around logical reasoning in support of a point of view or perspective rather than around time and events and their causes" (Derewianka & Jones, 2016, p.234). In a dialogic context, argumentation is an interactive process where individuals try to convince others of a particular stand, leading to critique and counter-arguments. To effectively engage students in argumentation, new (and/or improved) instructional models are necessary, along with opportunities for discourse and the use of evidence to support claims.

The increasing number of MLs in schools reaffirms the need for content area teachers to reflect upon other approaches to teaching and learning (de Oliveira, L.C., Braxton, D., & Gui, J., 2021). Acknowledging this need implies the understanding that the learning of contents in science, mathematics, and social studies is closely interconnected to the interaction learners have with language. Therefore, when it comes to content instruction, a teaching approach whose focus is on enhancing this interaction provides more learning opportunities to MLs. For students, particularly MLs, with limited opportunities to develop this language outside school, classrooms must facilitate simultaneous language and content learning. Various strategies are employed to make content accessible to MLs, like collaborative groups, visuals, and building on students' background knowledge. Some teachers simplify language of texts, but this can limit MLs, especially at intermediate to advanced levels, from learning academic language and independently reading content area texts. Hence, a well-rounded approach without overly simplifying the curriculum is necessary (de Oliveira, 2023).

The importance of understanding argumentation for a particular content standard suggests the use of the Teaching and Learning Cycle in the LACI framework to strengthen language scaffolding for all students and to integrate literacies from various disciplines (de Oliveira, 2023). LACI does not take for granted the needs of MLs, but rather implements a functional approach for language development that addresses the meanings made both through the content and the language. Since language is considered both a social practice and a meaning-making system, it is implied that when teachers focus on content through language, the approach leads to knowledge construction within each specific context – particularly, STEAM content areas.

LACI "provides a guiding framework of six scaffolding elements teachers can use to support MLs during classroom instructions" (de Oliveira, 2023, p.14). Although each C of support can be clearly identified as an element, the author states the importance of bearing in mind that they are all mutually linked and interrelated. The six Cs (see **Figure 1**; adapted from de Oliveira, 2016) incorporate a genre-based pedagogical framework that "breaks down academic language in texts discovering both the language and content [MLs] are using and developing" (p.26).

In addition, LACI's Teaching and Learning Cycle (TLC) comprises different phases: *building shared knowledge about a subject, sustained reading, deconstruction, joint construction, collaborative construction,* and *independent construction* (see **Figure 2**; adapted from de Oliveira, 2023). Rather than focusing on individual sentences or vocabulary words, the cycle starts with the whole text as the central focus. This teaching and learning process, which can be started at any phase depending on student requirements and teacher knowledge, is flexible and adaptable. The cyclical nature of this instructional model allows it to be recursive and for repeated application as learners become more acquainted with specific genres. It can be tailored to accommodate both short-term lessons and extended units of study.

One of the essential aspects of the TLC is the ongoing setting of context in every phase (de Oliveira, 2023). This continual contextualization helps students progressively deepen their understanding of a topic. The phase of *building shared knowledge* is especially crucial, as it aids students in developing their comprehension of the content, context, and particular genre texts, thereby promoting a critical orientation towards language.

Figure 1: LACI's Six C's of Support for Scaffolding Content Area Instruction for Multilingual Learners.

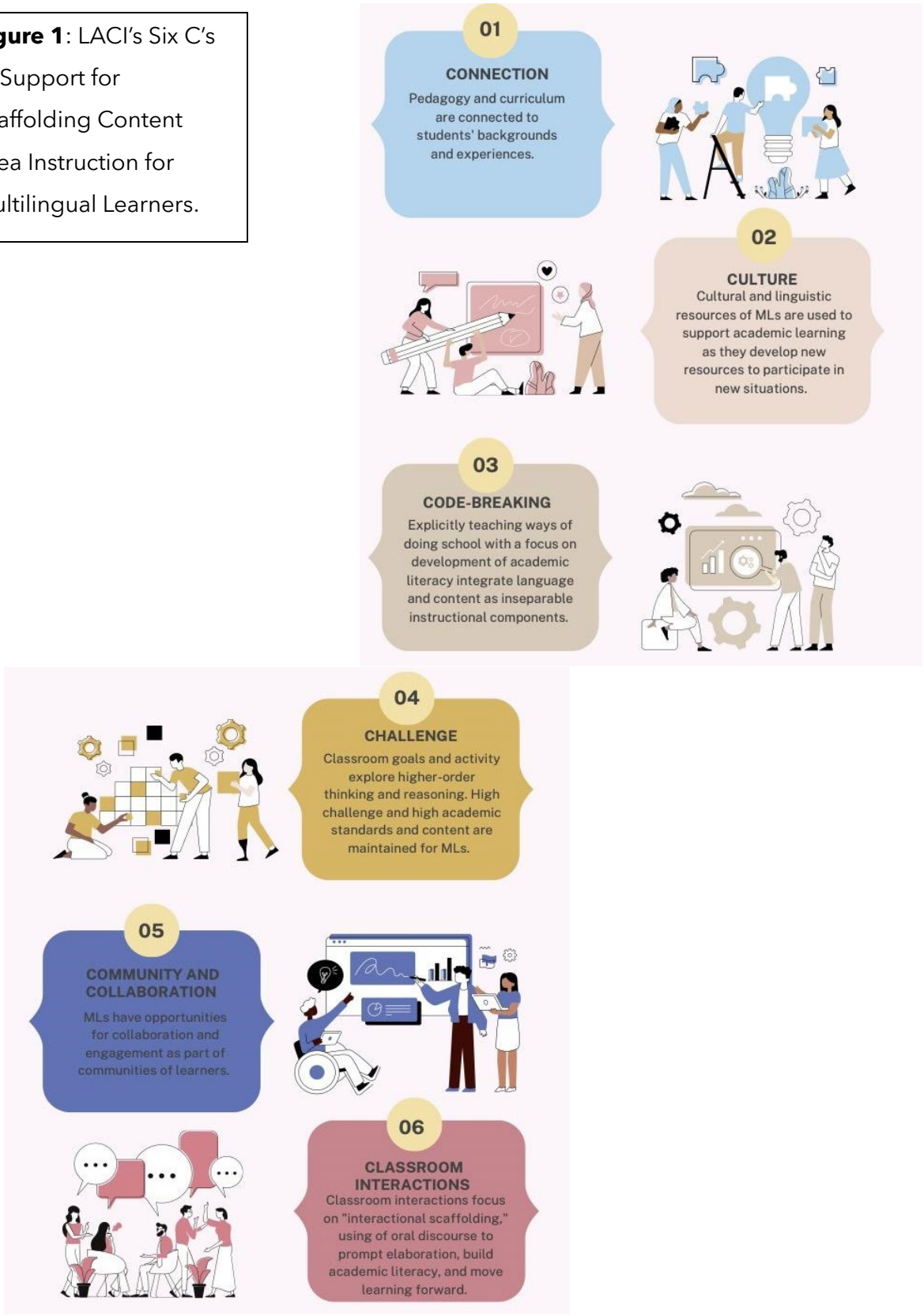
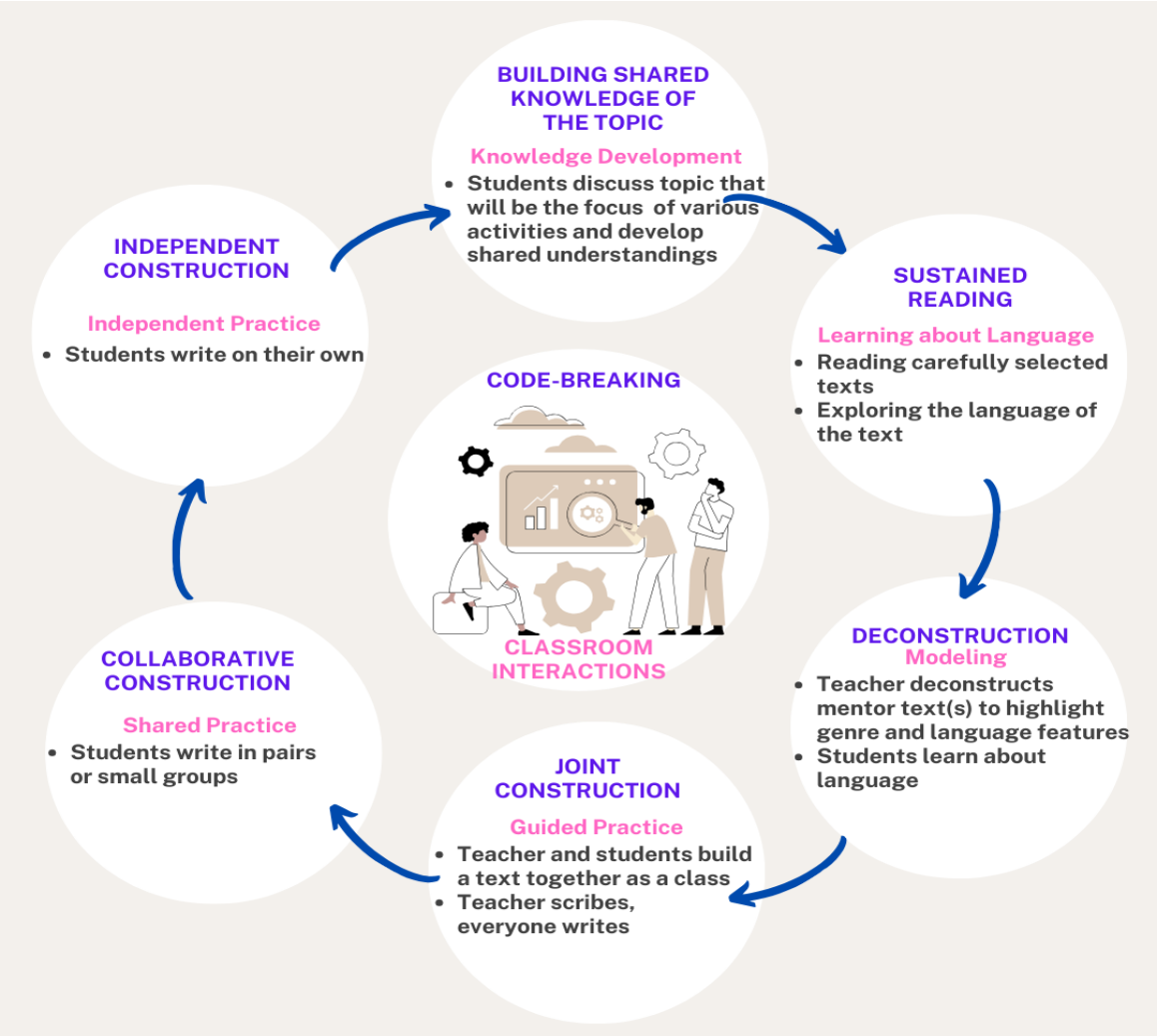


Figure 2: LACI's Teaching and Learning Cycle



However, the *building* phase does end, but rather "continues throughout the other stages of the teaching-learning cycle so that students' understanding of the field [i.e., content] accumulates and becomes increasingly sophisticated" (Derewianka & Jones, 2016, p.53). With the cycle promoting active teacher involvement, guidance, and support throughout all its phases, students' learning is consistently assessed. Both Brisk (2015) and de Oliveira (2017) have expanded the original TLC with the *collaborative construction* phase, aiming to enrich learning experiences.

> For this phase, the teacher designs pair or group activities for students to work together to develop a new, single text – a clear example of the C of *community and collaboration*. The teacher may elect to just focus on one stage for the collaborative construction. Students work with other students in pairs or small groups to construct a text together, brainstorming and negotiating ideas, writing, revising, etc. The teacher circulates the room and provides further scaffolding as needed, drawing on understandings developed in previous lessons. Teachers continue to support collaborative pairs or groups as needed. (de Oliveira, 2023, p.38)

With the addition of this phase, LACI's TLC emerges as an instrumental tool in aiding students' development and mastery of school genres across various disciplines.

Planning a Lesson

The STEAM lesson plan we chose to use (see Appendix A) explores the notion of sound by having students participate in various interactive stations and whole-class discussions (Virginia Department of Education, 2012). For our first step, we analyzed this lesson plan to understand which of the 6 Cs of LACI (de Oliveira, 2016) may have already been present and how they were represented. Table 1 shows examples from the lesson plan for each C of support, as identified. From our analysis, it was determined that all 6 C's of support were present in some form with the exception of the C of Culture. The representation of students varies from class to class, but the attitude of incorporating students' lived experiences can be universally practiced and brought into each lesson. For example, the incorporation of culturally relevant musical instruments (perhaps generated from students' suggestions) would center the learning on students' experiences and build more opportunities for connection and collaboration. Language objectives are also missing from the original lesson, which could have offered differentiation for challenging students at the appropriate level and specific goals for code-breaking the processes and information as tools for students to demonstrate their understanding. Additionally, while the C for building classroom community and collaboration was implied, explicit directions are necessary to build a supportive classroom for learning.

Table 1: Sample of Lesson Plan Links to LACI (de Oliveira, 2016)

LACI 6 Cs of Support	Examples from Original Lesson Plan	How could it be enhanced with a functional approach to language?
Connection	Background: "Musical instruments resonate at various frequencies to produce different pitches."	This is a great example of bringing the learning into the lesson, it has the potential to make a connection with the student's lived experience, they could share instruments from their homes. Could this connection be more meaningful at the beginning?
Culture	(None present)	Understanding the musical cultures of students includes their experiences in the lessons. The teacher can discuss this with the class prior to the lesson, incorporating familiar musical instruments and making time for them to discuss their ideas about the vocabulary in cultural contexts.
Challenge	There are many opportunities for challenging students to apply their understanding. Each station includes a set of questions: "ask them to record…, ask them to explain…, ask them if…"	These challenges should be supported with specific language scaffolds. The teacher can be open to different modes, language choices, and offer appropriate levels of challenge.
Code-Breaking	Vocabulary to learn with this lesson: amplitude, compression, compression wave, frequency, pitch, rarefaction, resonance, sound, speed, vibration, wavelength,	It is not clear how the vocabulary is introduced in the appropriate moments, defined with the students, practiced, and applied. We suggest authentic opportunities to discuss vocabulary in context. Using multi-modal methods during interactions may deepen understanding of the terms.
Community and collaboration	Might be implied (e.g., "Have the students…") but not explicit.	During the TLC, students will analyze, discuss, and build on their language together.

LACI 6 Cs of Support	Examples from Original Lesson Plan	How could it be enhanced with a functional approach to language?
Classroom interactions	Observations and Conclusions states: "Have the students go through each station and discuss the questions. Lead students to conclusions rather than merely telling them the *answers*". While there are examples of interacting with students in the stations, it does not give examples of dialogue.	Planning for common misconceptions, leading questions and opportunities for elaboration should be included. Teachers can accept and discuss student answers and move the learning forward. Arriving at the *answer* should include time for student dialogue using academic literacy.

Employing the Teaching-Learning Cycle

For our next step, we used the Teaching and Learning Cycle (see Figure 2 above) to organize and outline the lesson procedures (de Oliveira, 2023). Derewianka (2020) suggests the five steps prior to engaging with the TLC. Table 2 (below) maps these steps with our suggested alterations to the STEAM lesson plan. Note that the "major understandings" tie directly to the content standards that the plan is endeavoring to achieve. HS-PS4-1 is about mathematical representations to support a claim specifically regarding frequency, wavelength, and speed of waves (NGSS Lead States, 2013). The genre of argument was chosen for the TLC because of wording in the standard, i.e., "Use mathematical representations to *support a claim*…" [emphasis added]. Although NGSS suggests the integration of the Common Core's ELA/Literacy standard – "RST.11-12.7. Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem" (NGACBP/CCSSO, 2010a) – as well as standards 2 and 4 of the Standards for Mathematical Practices (NGACBP/CCSSO, 2010b), these literacy and practice standards ignore the prowess involved in supporting a claim. Thus, our alterations include activities that will guide students through the process of creating arguments and supporting their claims in preparation for the final task.

Table 2: Preparing for the STEAM lesson (adapted from Derewianka, 2020)

Derewianka (2020)	**Revised STEAM lesson plan components**
1. Identify the major understandings and abilities.	Content standard: HS-PS4-1. Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media.
2. Decide which genre would be appropriate.	Argument
3. Identify a culminating task.	5-paragraph essay responding to: *Why does a guitar or a piano need to have a body or case to protect its strings?*
4. Plan a number of activities to familiarize the children with the subject matter and the genre.	Subject matter: lab activities (whole class, small groups, and small-group stations) Genre: summarizing questions for each lab that use CER routine (Menon, 2023) for argument responses
5. Locate sample texts in the chosen genre.	Teacher created response for first whole-class activity

Also, the mathematics in the lesson is only implied in the background portion of the lesson plan and in the differentiation section at the end of the plan. According to the content standard, mathematical representations should be a key component of the implementation of HS-PS4-1 (NGSS Lead States, 2013). For the CER routine (Menon, 2023), students will need to supply evidence to support their claims. Each lab activity requires that students record the results of the procedures. Therefore, we suggest the addition of tables as mathematical representations wherein students can record their data and extract evidence for their responses to each lab's guiding or summarizing question.

One of the essential aspects of the TLC is the ongoing setting of context in every phase (de Oliveira, 2023). This continual contextualization helps students progressively deepen their understanding of a topic. The phase of *building shared knowledge* is especially crucial, as it

aids students in developing their comprehension of the content, context, and particular genre texts, thereby promoting a critical orientation towards language. However, the *building* phase does end, but rather "continues throughout the other stages of the teaching-learning cycle so that students' understanding of the field [i.e., content] accumulates and becomes increasingly sophisticated" (Derewianka & Jones, 2016, p.53).

Lesson Plan Alterations

Through this process we found areas to incorporate the enhanced scaffolds generated in the initial analysis and outlined how they can contribute to a functional approach to language. The TLC provided a framework for us to supplement the lesson starting with intentional connections to students' choices and experiences. While the original lesson plan (Appendix A) was discovered in a search for an existing plan wherein HS-PS4-1 was the primary standard, no explicit teaching about supporting a claim (i.e., argument) was present. This absence yielded another opportunity for alterations so that the revised plan would incorporate arguments more definitively, beginning with the inclusion of a language objective. From this point, we determined specific examples of classroom activities that accomplish the language objective and ultimately support the content objectives. As a result, we developed a TLC-oriented lesson for a 90-minute block class that also implements the tenets of LACI.

Language objective. Typically, a language objective relates to a key language function, task, or skill that will support the learning of the content. According to Baecher et al. (2014), "Attention to language instruction, especially academic language, within the content areas is understood to be the desired means to support [MLs], yet is also one of its most sophisticated pedagogical challenges" (p.120). The goal is to highlight the tools or strategies that these students may need to make sense of the content and to produce the language of the content. As such, the researchers suggest the inclusion of "one or more specific language functions, grammatical structures, micro-skills, learning strategies, or vocabulary that learners will learn about and be able to use in a period of instruction; [and] specific activities to either expose, introduce, and/or provide guided or freer practice to develop this understanding or skill" (p.127).

For this lesson, we focus on the language support needed for MLs to develop arguments and support their claims. Therefore, we will pull upon the CER routine in the form of anchor charts explaining the components of the routine and corresponding sentence

frames to aid students' sentence formation. stems. A corresponding graphic organizer will also be provided to assist in this process. Students will work together in small groups to create the arguments, resulting in the following language objective:

> *In small groups, students will use T-tables to record data from various investigations and then use CER graphic organizers with sentence frames to make claims about the results and support the claims.*

By adding scaffolds and specific language objectives to this lesson, we can provide flexibility to meet students where they are academically, socially, culturally, etc. while at the same time maintain high expectations for students working with the grade level standards.

Phase 1: Building Shared Knowledge

For this phase (approximately 10 minutes), the revised lesson plan begins with a whole-class brainstorm, wherein students verbally respond to the question, "What do you think of when you hear/see the word *sound*?" From this point, we suggest showing a quick video about sound and/or soundwaves using an online resource, such as YouTube, PASCO, PBS, or the Science Learning Hub. These websites offer videos that teachers can easily access to help provide the background knowledge that all students will need for such lessons. Following the video, the teacher will engage the class in a discussion of the ideas presented in the introductory video, "finding out what they know about the topic and beginning to develop shared understandings" (de Oliveira, 2023, p. 32). While this phase focuses on the Cs of connection and classroom interaction, it may also include culture depending on the video selection and students' ideas during the brainstorm and discussion.

Phase 2: Sustained Reading

In Phase 2, the teacher and students engage with the language of the learning through the written dialogue from the discussion of a related text (de Oliveira, 2023). In this case, the teacher will present students with a transcript of the video from Phase 1 and allow them time to identify vocabulary with which they are unfamiliar. Students should be challenged to appropriate the language at their development levels (WIDA, 2020), and thus, they may need to read the text with a partner or in a small group rather than independently.

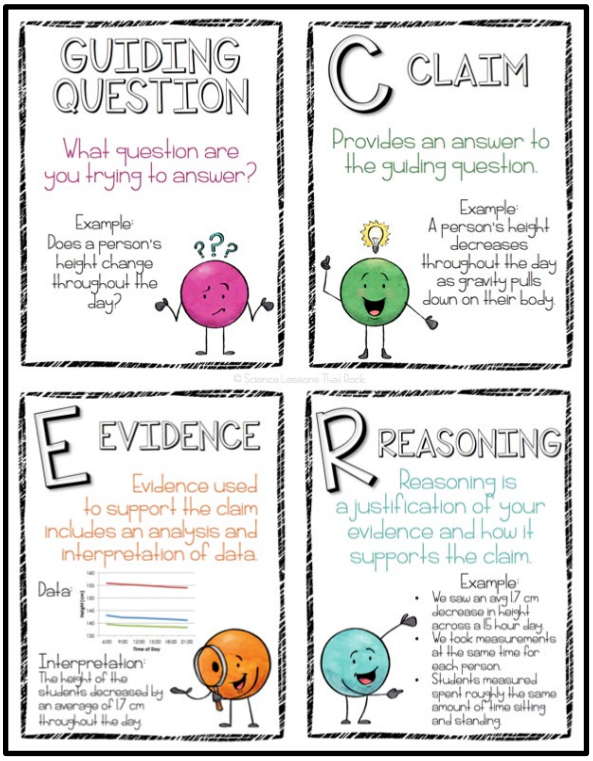
In addition, the teacher will offer as many visuals as possible, ensuring that the words *sound, pitch, wavelength,* and *frequency* are highlighted. She will simultaneously write the

vocabulary and key terms on the board to keep the language accessible visually and auditorily. Students may then practice using adjectives they already know to describe sound and clarify pitch in a class dialogue. The teacher will recognize all student answers and make explicit connections to as many students' experiences as possible. Phase 2 will last approximately 10 minutes and focuses on the Cs of connection, code-breaking, community and collaboration, and classroom interaction.

Phase 3: Deconstruction

This phase involves code-breaking, challenge, community and collaboration, and classroom interaction, as it is the time for the teacher to model how students are to complete a station task (de Oliveira, 2023). Each lab station throughout the block lesson will involve an investigation and a follow-up question that will require students to write a paragraph-long argument. Thus, it will be necessary to distribute copies of blank two-column T-tables and provide students access to CER anchor charts (Figure 3) and a graphic organizer (Figure 4). Note that the sample anchor charts in Figure 3 offer explanations of the CER routine as well as sentence frames to guide students in constructing their own sentences.

Figure 3: Sample CER Anchor Charts



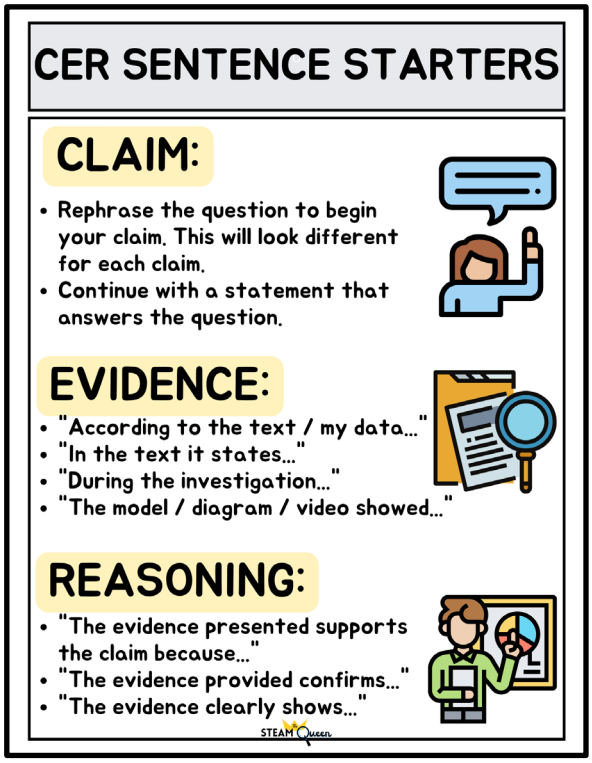
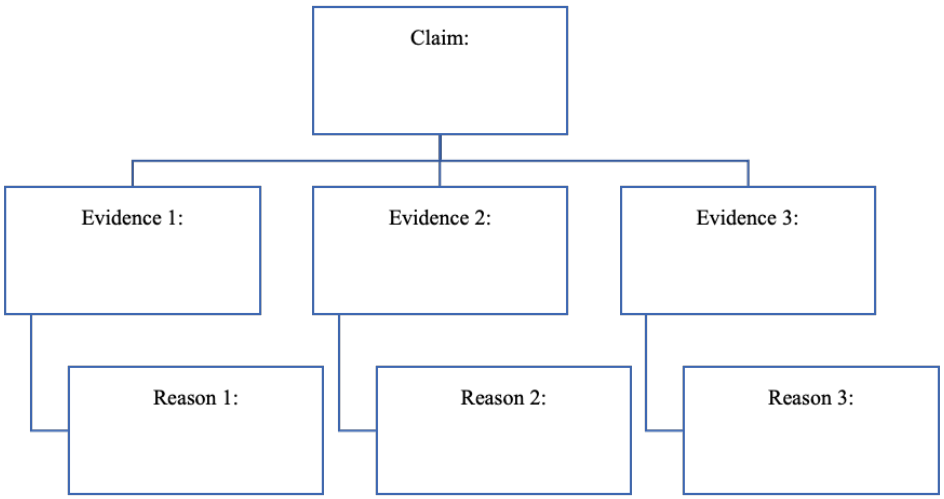


Figure 4: Sample CER Graphic Organizer



For this phase, the class will be divided into small groups of three or four students, and then the groups will conduct a hanger/desk investigation in two rounds – with and without their fingers in their ears. Students will record descriptions of what they hear on a T-table and then the groups will share their data with the class, with the teacher combining the data into one class table. She will then present the lab's follow-up question, "Which sound was louder?", and share a sample paragraph response. The teacher will demonstrate how she recorded her experiment data in T-table, made a claim, transferred the claim and supporting evidence to the CER graphic organizer, and generated reasons and a conclusion for the paragraph. She will also illustrate ways in which to discuss the vibrations and materials in such a response.

Phase 4: Joint Construction

From this point, the teacher will guide students through another station lab (Station 3 in the original lesson plan) for teacher and classroom collaborative work. This 10-minute phase, again, will engage students in code-breaking, challenge, community and collaboration, and classroom interaction. This investigation, *Stringed Instruments*, will demonstrate how materials can be altered in order to produce different pitches. Students will return to the same small groups as in Phase 3 and label a three-column T-table: *Band*, *Wavelength*, and *Description*. Groups will measure the length of a thinner rubber band (Band

#1) at three different wavelengths, and then record the measurements and corresponding descriptions in the table. They will follow the same process for a thicker rubber band (Band #2) and complete three rounds of plucking in the same way as Band #1, recording the wavelengths and descriptions.

To answer the new follow-up question, "Which rubber band and wavelength had the higher pitch?", groups will brainstorm, about a 1-paragraph response using the T-tables and CER anchor charts and graphic organizer, Then the teacher will bring the groups together to co-construct a response paragraph as she scribes for the class. Student choice and dialogue will lead to the shared writing process and provide another opportunity for clarification. The teacher will be intentional about highlighting the chosen language functions that are part of the assessment.

Phase 5: Collaborative Construction

For Phase 5, students will remain in their small groups and rotate every 10 minutes to the four remaining stations from the original lesson plan:

- *Musical Test Tubes* (formerly Station #1)
- *Sound Vibrations* (formerly Station #2)
- *Sound Boards* (formerly Station #4)
- *The Reversing Pitch* (formerly Station #5)

During each station, groups will follow the same processes modeled in the Deconstruction and in the Joint Collaboration phases, recording their data and observations in T-tables and then utilizing them to complete CER graphic organizers and write argumentative responses to follow-up questions. The teacher will circulate to the different groups to offer assistance; however, the mentor texts from the previous phases will remain accessible through students' notes and board work. These resources will serve as a first line of consultation for the pupils prior to seeking assistance from the teacher.

Phase 6: Independent Construction

Once students have completed each station, they will have a collection of writing that they will then consolidate into a longer and more developed prompt using the language functions and features that were addressed throughout the class session. For the last 15 minutes of this lesson, each student will begin writing a five-paragraph essay

responding to the overarching follow-up question: "Why does a guitar or a piano need to have a body or case to protect its strings?" The teacher will review with the class how to expand the CER routine for a full essay and use their class notes and writing as examples for scaffolding. As a cultural extension of this assignment, students should describe in the conclusion paragraph how what they learned in the day's class can be connected to music in their individual cultures. Students will complete a rough draft for homework, so that peer reviews and other revision-oriented activities can be conducted in the next class session.

Conclusion

The functional language approach recognizes the inherent challenges that multilingual learners face in deciphering academic language, typically presented in a complex, distinct way in textbooks, other learning materials, and by teachers. STEAM subjects, in particular, require an active student engagement that functional language awareness can enhance. Science education, as an example, requires students to engage in scientific argumentation. "Starting in elementary school, to learn content, MLs need to be able to see how language works in texts, read with comprehension, engage in discussion of complex issues, and critically evaluate the texts they encounter," (de Oliveira, 2023, p.3). This revised Teaching and Learning Cycle infused with LACI framework advocates the use of scaffolding strategies to provide MLs with multiple opportunities to revisit and internalize content promoting a fairer learning environment. This method of teaching functional language is a dynamic and adaptable pedagogical approach designed to accommodate MLs' learning needs. By focusing on the whole text and emphasizing continual contextualization, it fosters a deeper understanding of the content, context, and genre.

Questions:

1. What is the benefit of argumentation in learning?
2. What scaffolding strategies are used to teach this lesson plan?
3. What are other resources used by the teachers to enhance learning the lesson?
4. The authors quote Baecher et al. (2014): "Attention to language instruction, especially academic language, within the content areas is understood to be the desired means to support [MLs], yet is also one of its most sophisticated pedagogical challenges."

Why do you think attending to language instruction might be so challenging for teachers?

5. The authors claim, "the phase of building shared knowledge is especially crucial, as it aids students in developing their comprehension of the content, context, and particular genre texts, thereby promoting a critical orientation towards language" (p. 13). (a) Reflect on this quote with a small group. Can you provide further explanation? (b) Exactly how does building a shared knowledge develop a student's comprehension of text and promote critical orientation towards language? (c) What are the specific aspects of shared knowledge that benefit students' comprehension? Give an example that illustrates this claim.

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Appendix A.

Original Lesson Plan

Science Enhanced Scope and Sequence – Physical Science

Sound

Strand	Force, Motion, and Energy	
Topic	Investigating sound	
Primary SOL	PS.8	The student will investigate and understand the characteristics of sound waves. Key concepts include a) wavelength, frequency, speed, amplitude, rarefaction, and compression; b) resonance.
Related SOL	PS.1	The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations in which m) models and simulations are constructed and used to illustrate and explain phenomena.
	PS.8	The student will investigate and understand the characteristics of sound waves. Key concepts include c) the nature of compression waves; and d) technological applications of sound.

Background Information

Sound waves are produced by vibrations. These vibrations cause the matter around them to squeeze together, creating a compression, and spread apart, creating a rarefaction. A sound wave is a compression wave that consists of repeating patterns of compressions and rarefactions. Sound waves can be described by their wavelength (the distance between one compression and the next), amplitude (the amount of energy carried by the wave), frequency (the number of waves that pass a certain point in a given amount of time), and speed. Wavelength and frequency are inversely proportional; therefore, a wave with a longer wavelength has a smaller frequency. The wavelength and frequency of a sound wave determine the pitch of a sound. Pitch is how high or low a sound seems to a person. A wave with a higher frequency has a higher pitch. The amplitude of a wave determines the loudness of a sound wave. The greater the amplitude of a wave, the louder the sound is to a person.

Resonance is the tendency of a system to vibrate at maximum amplitude at certain frequencies. Musical instruments resonate at various frequencies to produce different pitches.

Materials

Introduction

- Wire hangers
- String

Station 1

- Five test tubes labeled A–E and filled with water to allow for the following amounts of remaining air in each tube:
  - A—Air column = 12.6 cm
  - B—Air column = 11.4 cm
  - C—Air column = 13.4 cm

  - D—Air column = 10.3 cm
  - E—Air column = 9.3 cm
- Test tube rack
- Pencil
- Beaker

Station 2

- Table tennis ball on string
- Tuning fork
- Pie pan with water

Station 3

- Tissue box
- Rubber bands of different thicknesses

Station 4

- Music box without sound board

Station 5

- Three identical bottles with varying amounts of water
- Ruler
- Pencil

Vocabulary

amplitude, compression, compression wave, frequency, pitch, rarefaction, resonance, sound, speed, vibration, wavelength,

Student/Teacher Actions (what students and teachers should be doing to facilitate learning)

Introduction

For each student, take one wire hanger, and tie a 15 cm string to one end of the hanger, and tie another 15 cm string to the other end of the hanger. Tie loops on the loose ends of the strings just large enough to fit an index finger through. Have students place the index finger of each hand through a loop and hold the hanger/string system in front of them. Students should knock the hanger into a desk and listen for the sound. Ask students to describe the sound. Most students will answer that the sound is very faint. Point out to students that the wire is vibrating and that they may be able to feel it through the string on their fingers. Have students place their fingers in their ears and repeat striking the hanger into a desk. Ask students to describe this sound. They should hear a gong-like sound that is much louder than the prior situation. Ask students to explain the difference in terms of vibration and materials.

Station 1: Musical Test Tubes

Station 1 is focused around the concept of how frequency determines pitch. If a material has the properties to vibrate quickly, the sound will be perceived as a high pitch. If the material vibrates slowly, the sound emanating from the material has a low pitch. A foundational concept for this station is that the source of sound is vibration.

1. Ask students to predict which of the test tubes will have the highest pitch and lowest pitch. Ask students to record their prediction in their notebooks.

2. Play the song as instructed. The song is "This Land is My Land," but do not reveal this to the students. It will be difficult for students to identify the song without rhythm. Hold a pencil by the point end. Tap out the following pattern on the test tubes with the eraser end:

   AABCABDDEDBABACA

3. Ask students, "Which test tube has the highest pitch? Which has the lowest pitch? What song is this?"
4. Tap the beaker. This beaker has the same height air column as note B in the test tube. Compare the note made in the beaker with the note made with the test tube.
5. Ask students to create another tune and share their pattern with the class.

Station 2: Sound Vibrations

Station 2 demonstrates more clearly that a tuning fork makes a sound due to vibrating tines. Careful observation of the relationship between the length of the string with the table tennis ball helps to reinforce the idea of resonance.

1. Have students put the table tennis ball close to the tuning fork, and strike the tuning fork on their desks. Ask them to record their observations.
2. Have students try the same experiment holding the table tennis ball by different lengths of string in their hands. Ask them if there is a certain length of string that works better. Ask them to explain the behavior of the table tennis ball.
3. Have students strike the tuning fork on their desks, and immediately put the tuning fork in the pie pan full of water. Ask them to record and explain their observations.
4. Have students strike the tuning fork and put the handle of it on their foreheads. Ask them to explain what happens to the sound.

Station 3: Stringed Instruments

Station 3 shows different ways materials can be altered in order to produce different pitches. Students should realize that the faster the material vibrates, the higher the pitch. Reducing the amount of material allowed to vibrate has the same effect.

1. Have students pluck one of the rubber bands. Ask them to keep the same tightness, but create a shorter wavelength. They should do this by making the rubber band shorter by putting their fingers in the middle of it. Then have them pluck it and describe the difference.
2. Have students pull the rubber band tighter and pluck. Ask them to explain what happens.
3. Have students try a thicker rubber band. Ask them to explain the sound difference.

Station 4: Sound Boards

Station 4 displays the utility of a sound board. When the inside workings of the music box are turned without any material around it, the sound is very soft and weak. When the music box is placed on a table, the sound is much louder. Students begin to see that sound waves can travel more effectively through solids. Close inspection of the music box shows that the high notes are played by short tines and the low notes are played by long tines. The length of the tines change the frequency of the wave produced.

1. Hold a small music box in your hand and carefully turn the handle. Ask the students if they can hear anything.

2. Put the music box on the desk and turn the music box. The sound travels through a solid this way. Ask the students how the sound changes.
3. Ask the students how the speed of a wave is affected by the medium through which it travels.
4. Ask the students to describe the pitch made by short prongs.
5. Ask the students to describe the pitch made by the long prongs.
6. Ask the students to describe the relationship between the length of the prongs and the frequency of the wave produced.

Station 5: The Reversing Pitch

Station 5 helps students to parse out the source of sound. Within the same flask of water, two sounds can be produced. If a student strikes the flask, the water vibrates. When a student blows across the top of the flask, the air vibrates. The station is set up so that students will hear different pitches from different vibrations.

1. Lift bottle A with two fingers around the neck and hit the side of the bottle with a ruler. Do the same with bottles B and C. Ask the students to identify the bottle with the highest pitch.
2. Now blow over the mouth of each bottle and listen for the pitch. Ask students to identify the bottle with the highest pitch.
3. Ask the students to identify the source of the vibration when the bottles were hit on the sides.
4. Ask the students how the tone was produced when you blew into the bottle.
5. Ask the students why a bottle produces the same pitch when hitting it or blown across.

Observations and Conclusions

1. Have the students go through each station and discuss the questions. Lead students to conclusions rather than merely telling them the "answers."

Assessment

- **Questions**
  - How is the pitch of a sound related to the frequency of the wave?
  - When the tines on a tuning fork vibrate, how are compressions and rarefactions formed?
  - How can you tell if the swinging frequency of the table tennis ball is in resonance with the frequency of the tuning fork?
- **Journal/Writing Prompts**
  - Describe how columns of air can be changed to make different notes.
  - Explain how you can change the pitch of a stringed instrument.
  - Explain why a guitar and a piano need to have a body or case around the strings.

Extensions and Connections (for all students)

- Create a musical instrument from scratch. The instrument can be percussion, wind, or string. Explain the following concepts using your instrument: source of sound, loudness, pitch, frequency, amplitude, and quality of sound. Play a familiar tune on the instrument and explain how you tuned the instrument.

- Have students research how the bones and other parts of the human ear work. Explain to the class how the sound waves get converted into messages to the brain.
- Have students create a poster of the causes of hearing damage and ways people can prevent hearing loss.

Strategies for Differentiation

- Obtain an oscilloscope if possible for students to be able to see the sound waves.
- Have students discuss their observations rather than writing responses.
- Provide written, simplified, step-by-step procedures at each station.
- Assist students in drawing a compression wave. Have students label the wavelength and amplitude of their wave. Discuss how it would change as frequency and volume of sound changed.
- Have students fill various shoe boxes with round materials (e.g., marbles, jaw breakers, billiard balls) and describe how small materials represent higher frequencies and larger materials represent lower frequencies when shaken.
- Have students use an audiogram of sounds to give a pictorial representation of familiar sounds.

Appendix B.

LACI Revised Lesson Plan

Grade Level: 9-12th grade
Subject Area: Physics
Lesson Title: Investigating Sound
Duration of the Lesson: 1 day 90 minute block or 4 days of 30 min blocks

State Content Standard What standard(s) are most relevant to the learning goals?	HS-PS4-1. Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media. Science & Engineering Practice Standards: 3. Planning and Carrying Out Investigations 5. Using Mathematics and Computational Thinking 7. Engaging in Argument from Evidence
Content Objectives (related to the subject matter central focus)	Students will be able to discuss the characteristics of sound waves (e.g., frequency, wavelength, and speed of waves) and to use and construct investigations that will illustrate the phenomena of sound.
Language Objectives (related to key language function, task, or skill)	In small groups, students will use T-tables to record data from various investigations and then use CER graphic organizers with sentence frames to make claims about the results and support the claims.
ELD Standard(s)/WIDA Standards e.g., WIDA or state ELPD standard[s] that are the target of student learning.	ELD-SC.9-12.Argue.Expressive Students will construct scientific explanations that: describe reliable and valid evidence from multiple sources, establish neutral or objective stance in how results are communicated, summarize and refine solutions referencing scientific knowledge. ELD-MA.9-12 Explain.Expressive Students will construct mathematical explanations that: introduce concept or entity, share solutions with others, describe data and/or approach used to solve a problem, state reasoning used to generate own or alternate solutions.

Instructional Strategies and Learning Tasks
Description of what the teacher (you) will be doing and/or what the students will be doing.

Phase 1: Building Shared Knowledge of the Topic 10 Minutes	• Have class brainstorm verbally: "What do you think of when you hear/see the word *sound*?" • Show introductory video: https://www.pasco.com/products/guides/sound-waves

Connection Culture Code-Breaking Challenge Community/ Collaboration Classroom Interactions	● Conduct whole-group discussion asking students what they know about sound
Phase 2: Sustained Reading 10 Minutes Connection Culture Code-Breaking Challenge Community/ Collaboration Classroom Interactions	● Provide students a transcript of the video from Phase 1 ● Allow students time to identify vocabulary with which they are unfamiliar ● Present as many pictures as possible for key terms in the text. Be sure to highlight *sound, pitch, wavelength,* and *frequency* ● Simultaneously write the vocabulary and key terms on the board ● Conduct class dialogue, having students practice using adjectives they already know to describe sound and clarify pitch.
Phase 3: Deconstruction 10 Minutes Connection Culture Code-Breaking Challenge Community/ Collaboration Classroom Interactions	Do Introduction Lab as a whole class: ● Distribute copies of 2-column T-tables and CER graphic organizer to students. ● Have them label the columns of the table for the lab: Sound #1 and Sound #2. ● Divide class into small groups of 3-4 students each. ● Have each group take one wire hanger and tie a 15 cm string to one end of the hanger, and tie another 15 cm string to the other end of the hanger. Tie loops on the loose ends of the strings just large enough to fit an index finger through. Place the index finger of each hand through a loop. ● One person in each group should knock the hanger into a desk and have the other group members listen for the sound, paying attention to the vibrations and materials. ● Have each group describe the sound by recording their responses under Sound #1 column *Most students will answer that the sound is very faint. Students may be able to feel it through the string on their fingers because the wire is vibrating.* ● Have the groups place their fingers in their ears and have the same group members repeat striking the hanger into a desk. ● Have each group describe this sound by recording their

	responses under Sound #2 column *They should hear a gong-like sound that is much louder than the prior situation.* ● Have groups share their responses as a class and create a combined T-table for the class. Help them focus their notes to include vibration and materials. ● Follow-up question: *Which sound was louder?* ○ Present mentor response (1 paragraph – claim, 3 reasons using evidence from the T-table, conclusion), using CER anchor charts/graphic organizer
Phase 4: Joint Construction 40 Minutes Connection Culture Code-Breaking Challenge Community/ Collaboration Classroom Interactions	Have students conduct 2nd Station Lab: *Stringed Instruments* ● Have students return to the same small groups ● Distribute 3-column T-tables and label the columns *Band,* *Wavelength,* and *Description*. ● Provide each group with 2 rubber bands (same 2 thicknesses for each group). ● Have the groups measure the length of their thinner rubber bands (Band #1) and record the measurement in the table. ● Then have the groups pluck the bank and describe their observations in the table. ● Ask students to keep the same tightness but create a shorter wavelength. (They should do this by making the rubber band shorter by putting their fingers in the middle of it.) ● Have the groups measure the wavelength of the band (finger to finger), pluck it, and note the measurements and differences. ● Have students pull the rubber band tighter and pluck, recording the wavelength and differences. ● Have students try a thicker rubber band (Band #2) and complete three rounds of plucking in the same way as Band #1, recording the wavelengths and descriptions. ● Follow-up question: *Which rubber band and wavelength had the higher pitch?* ○ Have groups think about a 1-paragraph response using T-tables and CER anchor charts/graphic organizer ○ Have class co-construct a response (teacher scribes)
Phase 5: Collaborative Construction 15 Minutes Connection	● In small groups, students will complete the remaining 4 stations, rotating every 10 minutes: ○ *Musical Test Tubes* (sounds of test tubes & beakers) ○ *Sound Vibrations* (various wavelengths between tuning fork & table tennis balls)

Culture Code-Breaking Challenge Community/ Collaboration Classroom Interactions	○ *Sound Boards* (pitches from music boxes) ○ *The Reversing Pitch* (striking vs. blowing across a flask of water) ● During each station, have groups use T-tables for recording their data and observations ● Groups will work collaboratively to develop 1-paragraph arguments for each station *Note: The mentor texts from deconstruction and joint construction should remain accessible through student notes.*
Phase 6: Independent Construction Connection Culture Code-Breaking Challenge Community/ Collaboration Classroom Interactions	Each student will begin writing a 5-paragraph essay responding to: *Why does a guitar or a piano need to have a body or case to protect its strings*? ● Review with the class how to expand the CER routine for a full essay ○ Specify in the conclusion paragraph how what they learned in the day's class can be connected to music in their individual cultures ● Class notes and writing should be used as exemplars ● Students should complete a rough draft for homework (revisions next class session)

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Dr. Karen Terrell is the Assistant Professor of Mathematics Education at Loyola University Maryland. The mission of providing high-quality education for all has guided her teaching practice, service, and research, as evidenced by the varied experiences throughout her career since 2000. She has taught high-school mathematics, middle-school mathematics, and both undergraduate and graduate courses. She also has served as a Turnaround School Mathematics Coach for Boston Public Schools, and she later consulted for schools in Massachusetts and Rhode Island as well as the Massachusetts Department of Youth Services. She received her Doctor of Philosophy degree from Boston College in 2012. Her specialties include mathematics education, content and language integration, and assessment. Her research interests include these topics as well as genre pedagogy and technology integration for diverse learners. Dr. Terrell belongs to the AERA, TESOL, and NCTM professional organizations, as well as state affiliates, and currently serves as the 2nd Vice President of GATESOL.

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Chapter 6

Developing Critical Thinking and Language Skills through Project-based Learning and the Knowledge Framework*

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Objectives: Educators will be able to…

- Know the basic concepts of critical thinking, project-based learning, Appraisal Theory, and the Knowledge Framework.
- Examine why these concepts are a critical part of WIDA-based teaching.
- Analyze two detailed plans for teaching the language of critical thinking through project-based learning.
- Integrate language and content through thinking skills and associated language with the Knowledge Framework.

Introduction

Critical thinking (CT) skills are one of five Cs in the Cambridge Life Competencies Framework (2020) along with Creativity, Collaboration, Communication, and Competencies for digital literacy. CT skills are honed by asking questions, gathering and evaluating information, and drawing evidence-based conclusions, all tasks that require the ability to interpret and use language, and thus we can consider teaching CT as falling within the WIDA framework in alignment with TESOL (2019) standards. Developing critical thinking skills is a goal of modern education at all levels, but information about the language of CT—and ideas that teachers can use to help teach the language of CT within the context of their own subject areas—is not often available. This chapter aims to address that lack with ideas that can also promote the development of the other four Cs.

Teaching language, according to the WIDA Standards Framework (WIDA, 2020), is best done in the context of age-appropriate subject matter so that academic language and content can be developed simultaneously (TESOL, 2019). Such subject matter exploration is

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naturally promoted through Project-based Learning (PBL), an approach that provides a context for learners to learn and produce language in real-life contexts. Research on PBL has revealed improvements in participants' problem-solving and decision-making skills as they ask questions and gather, evaluate, and report the information they have explored. In this way, PBL and CT fit together in that teaching CT best occurs by engaging students in projects that allow investigations of student-chosen interests within subject content.

Moreover, projects are educational activities that can be organized through the Knowledge Framework (KF), a linguistic model based on Systemic Functional Linguistics (SFL) and thus sees language as a resource for making meaning in context. This chapter aims to promote an understanding of how the KF can help teachers develop their students' language of CT by doing projects using the SFL concepts of field (what the KF addresses) and tenor, in particular the notion of Appraisal. This chapter first summarizes each of the key areas identified above—critical thinking, PBL, Appraisal, and KF—then offers ideas for projects that can promote the identification, use, and development of the language of CT while building language skills and content.

Critical Thinking

Extensive research in general and second language education research shows that Critical Thinking (CT) is seen as a 21st-century skill that must be taught to foster deeper learning, higher-order thinking, and language development (Beckett, in press; 2023; Beckett & Slater, 2020). Facione (1990) defines CT as an essential tool of inquiry and for deciphering arguments with evidence, self-correction (Saxton et al. 2012), and 'reflective self-criticism' (Ennis, 1987). Paul and Elder (2006) see CT as "the art of analyzing and evaluating thinking" (p. 4). For Savery (2006), CT is a "transferable higher order thinking skills necessary for objectivity; logical, justified, and persuasive reasoning; recognition of and understanding for bias correction; and inductive theory development" (cited in Beckett, in press, p. 8).

As pointed out by Saxton et al. (2012), CT is crucial in all levels of education, workforce, for "responsible citizenry" (Dewey, 1916), and individual well-being in this post-truth era when there is an increasing need for filtering irrelevant/incorrect information. CT development must be fostered with systematic and intentional deep learning with sophisticated educational activities contextualized in subject area contents. It should also focus on moral and ethical issues (Facione, 1990) through project work. Such activities and

well-designed project work can help cultivate CT skills development and improvement "through a metacognitive process of asking vital questions; gathering, assessing, interpreting information; and drawing 'well-reasoned conclusions and solutions..." (Beckett, in press).

The Cambridge Life Competencies Framework (2020) defines CT as analyzing, understanding, evaluating ideas and arguments, solving problems, and making decisions. It also sees CT skills as having instrumental value for standardized tests (e.g., IELTS), developing increased linguistic awareness (e.g., noticing), and social awareness (e.g., understanding and managing different points of view) in the safe space of second language learning environment. In practice, however, language development is rarely the focus of CT in general education. Often in second language education, a CT-focus is seen as an opportunity for practicing language skills and is taught as such with a form-focused language-teaching mentality (e.g., Opp-Beckman, 2019; Üstünlüoglu, 2004). Even helpful SFL examples which examine stance and carry out critical discourse analysis on school texts have typically focused on a language analytic approach (e.g., Derewianka & Jones, 2016; Fang & Schleppegrell, 2008; Schleppegrell, 2004; Schleppegrell & Achugar, 2003; Schleppegrell, Achugar, & Oteíza, 2004; Unsworth, 1999). SFL has also been used as a theory to help readers critically view images, showing that there are times when the image placed to support a text may not in fact be supporting it (see Kress & van Leeuwen, 1996).

The importance of CT, along with other 21st century skills, cultivated through project-based learning (PBL), is evident in the national and international funded curriculum reform and STEM (science, technology, engineering, and mathematics fields) establishment in general education (see Beckett et al, 2015; 2016; Beckett, Slater, & Mohan, 2020). In second language education, it shows in the professional organization standards and guidelines (e.g., ACTFL, TESOL, WIDA, and The Cambridge Life Competencies Framework) as well as practical CT training efforts, and emerging research (see Beckett, in press; 2023). The standards and guidelines for TESOL teacher candidates promote student-centered L2 and foreign language curricular that focus on both language and subject matter content delivered with digital resources and projects (TESOL, 2019).

What we see, especially in L2 education, is a realization of the importance of CT and the desire to teach it, but there is a need for awareness and training regarding how this can be done. Such need for training includes awareness-raising of CT, not from a second language acquisition view that sees it as a task for practicing language proficiency, but from a

systemic functional linguistics (SFL) view that sees CT as a language socialization educational activity carried out through project-based learning (PBL) approach (Beckett, 2023).

Project Based Learning

Project-Based Learning (PBL) is an educational approach for student-centered experiential learning in authentic contexts. Currently, it is closely associated with teaching and learning of 21st century skills—critical thinking, creativity, collaboration, communication, and competence in digital learning competency, "through planning, researching (empirical and/or document), analyzing and synthesizing data, and reflecting on the process and product orally and/or in writing by comparing, contrasting, and justifying alternatives" (Beckett, 1999, p. 4). As such, the PBL approach is for deep learning and higher order thinking skills development in authentic subject matter content areas (Beckett, 2023; Kuhn, 1999), which ties PBL strongly to the goals of the WIDA framework as well as ACTFL and TESOL standards. A CT project can serve as a "language socialization activity or sociocultural contexts for teaching and learning curriculum content, school and social cultures" (Beckett, in press, p. 12). Additionally, project work or projects also serve as contexts in which L2 students learn project related language *functionally* by connecting the form contextually as they learn the content material (Dewey, 1926; Dewey & Dewey, 1915; Mohan, 1986) and 21st century skills associated language (Beckett, 2023). Through such projects, students gain transferable skills and knowledge necessary for further schooling and life in society (Beckett, 1999) by also learning how to learn.

This language socialization view (Ochs, 1988) is in line with Hallidayan Systemic Functional Linguistics (SFL) that sees language as a resource for making meaning (Halliday, 2004), not as the decontextualized acquisition of vocabulary and grammar. Mohan, Slater, Beckett, and Tong's (2015) illustration of adult students' work with *action discourse*, *reporting discourse*, and *expounding discourse* using theory-practice structure is a good empirical example of how this works with the conclusion that students improved their understanding of content and their ability to discuss that understanding. Slater and Beckett's (2019) project unit called "Applying for graduate school" serves as a practical example that shows how an SFL-informed content-based technology-mediated project can provide specific language socialization for L2 students seeking acceptance into English-medium graduate programs.

However, as Beckett (in press) points out, teaching and learning CT in curriculum contexts from an SFL perspective can be challenging, especially for teachers who are used to teaching discrete language or content skills. Yet, ideas for and examples of SFL-informed CT projects from a language socialization perspective, a combination that the WIDA framework advances, are scarce. The only work we are aware of to date is that of Beckett (2023), who shows how CT may be taught in a social studies class through a social media project from an SFL perspective utilizing Appraisal (Martin & White, 2005) to research and articulate CT as well as social studies content and the language associated with digital technology. To help teachers and students move beyond turning CT into another language practice task, more CT project ideas, examples, and strategies are needed.

Appraisal

Appraisal Theory is situated within Halliday's main theory of Systemic Functional Linguistics as part of the Interpersonal Metafunction. Its development beyond Halliday's earlier work (e.g., Halliday, 2004) was furthered by Jim Martin and Peter White (see Martin & White, 2005; White, 2015) to provide a theory for examining how attitude, both positive and negative as well as the strength of those polarities, can be constructed through language. Appraisal theory, as White (2015) states, "offers the possibility of new insights into how texts enact individual and collective identities… and into the workings of texts which function to persuade and influence public opinion" (p. 6). In other words, Appraisal analysis helps to identify the stances that speakers and writers adopt about the ideas they are presenting. An understanding by students of this type of language use and how to identify it is an important skill to evaluate the truthfulness and biases of what they are hearing or reading, which is part of critical thinking. Although it is not the intention to present the full theory in this chapter, we describe some of the key terms within the theory and offer sources that provide a fuller description for interested readers. We also advise that even a basic understanding of the kinds of resources mentioned in the following two paragraphs is sufficient to bring students' attention to the types of language that can help them become more critically aware of biases and deceptions and thus help develop their CT skills. We do not advocate teaching Appraisal theory as a discrete topic; developing projects that can naturally draw attention to evaluative language in use as well as having students use this language is the goal. Ideas for such projects are presented later.

Appraisal language, or the language of evaluation (Martin & White, 2005), works together with another element of the Interpersonal Metafunction: *Mood*. Simply put, *Mood* provides us with resources to interact in the form of the grammatical constructions we use, or whether the clause is in the form of a statement, a question, or a command (Halliday, 2004). A command signifies a strong power relationship by the person giving the command, whereas a question is much more interactive, inviting dialogue or thought from the interlocutor. A statement is often understood as an indication of fact, or the speaker's/writer's belief of what may be reality. As an example, most clauses in information reports are constructed as statements. But as one of our project ideas suggests, these statements may still require a great deal of critical thinking! Our goal in this chapter is to heighten teachers' understandings of the importance of having students think critically about what they hear and read at an age-appropriate level, which in turn helps students learn connections between language and content.

Although important, grammatical forms are not the only resources we need to interact successfully. We also express feelings and opinions ("Attitude"), and we can make these attitudes stronger or weaker ("Graduation"). We also have resources for opening possibilities or closing them ("Engagement"). *Attitude* can be further defined as describing emotions or how people feel ("affect"), evaluating things and happenings ("appreciation"), and judging people's behavior ("judgment"). *Graduation* can gain further distinction by increasing or decreasing the "force" of the utterance (using words such as *slightly* or *totally*) or the "focus," which can be sharpened (e.g., a *true* story) or softened (e.g., *kind of* sorry). Finally, *Engagement* can be considered monoglossic (a single voice, related most closely to the bare statement of the abovementioned mood system) or heteroglossic, made up of many voices and thus open to other possibilities. This latter resource involves attribution to other possibilities, both vague (e.g., *some people say, they say, it's said*) and specific (e.g., *the King said, Martin & White (2005) stated*). Attribution can be an interesting area of critical thinking because the choice of verbal process used in texts often reflects the author's stance. Consider the writer's commitment to the information presented in the original source when s/he uses *the author stated* versus *the author implied*.

The preceding section has briefly outlined the various aspects of the Appraisal Network with the aim of showing the types of language that may be important to notice when thinking about developing students' language of critical thinking. Whereas we emphasize

that teachers do not need to be proficient in the functional analysis of Appraisal language to help their students understand stance in texts, the resources we have included in this section are excellent reading to hone analytical skills. The next section will describe Mohan's Knowledge Framework and show how Appraisal fits into the six boxes that make up a social practice.

The Knowledge Framework (KF)

Grounded in Systemic Functional Linguistics (SFL), the KF is a heuristic that educators and materials developers can use to ensure and demonstrate how language, content, key visuals, and thinking skills (including critical thinking) are integrated in ways that can help all students learn. Created by Bernard Mohan (Mohan, 1986), the KF revolves around the concept of an educational activity or social practice, such as a project or a unit plan. Successful participation in these activities involves both action (practice) and understanding (theory).

Mohan's KF appears as six boxes, with the top three reflecting the knowledge structures representing theory (Classification, Principles, and Evaluation) and the bottom the knowledge structures of practice (Description, Sequence, and Choice). Each theory/practice pair has a close relationship. Description relates to Classification in that our ability to describe is based on our knowledge of the appropriate classifications (think that having classifications of color, size, materials, and birds allows us to describe something we see as a large, pink, plastic flamingo). Similar relationships hold between Sequence and Principles (we can observe a sequence of events but understanding it depends on our knowledge of causes and effects), and Choice and Evaluation (we make choices based on previous or current evaluations of those choices). For an easy-to-digest description of the KF, see Slater and Gleason (2011).

It is this third pair of Choice and Evaluation that lends itself most obviously to the language of CT and Appraisal, although as our brief presentation of Appraisal language above suggests, and as we will show in our project ideas which follow, all boxes are involved to make up a full social practice, of which a project is an educational example. This is most obvious when we consider the Mood system, the grammatical structure of the clause, which can be used to construct any of the knowledge structures. But there are interesting questions that arise particularly with the knowledge structure of description: How we describe

something may also provide evidence as to how we feel about what we are describing and thus blur the distinction between Description and Evaluation. Compare the two following clauses as an example: The sea cucumber is spikey (Description). The sea cucumber is ugly (Description? Evaluation?). Whereas both may be a description of the animal and thus fall into the knowledge structure of Description, the second carries a much stronger speaker's Evaluation. Bringing students' attention to these types of meanings is an important part of teaching CT, and from a KF perspective, can help students recognize when Attitude (specially Appreciation) is being constructed outside of its usual Evaluation box. In the next section, we describe two projects that aim to raise consciousness of this type of language use.

The KF is a useful organizational tool for developing unit plans and projects and has been put into practice, researched, and evaluated at various levels of schooling (see Slater, 2023, for a comprehensive review of the literature). While the KF as an instructional organizer has recently been combined with project-based language learning (e.g., Slater & Beckett, 2019), and research into teaching PBL has shown that teachers use the language of the KF despite not drawing attention to it in their instruction (Slater, 2020), little has been done to present educators with models that merge the two. Moreover, despite a strong connection between CT and SFL—critical discourse analysis as a field was linked early on to SFL as Halliday's work because SFL is well able to illustrate "the ways that semantic networks carry meaning potential in social and cultural contexts" (Flowerdew & Richardson, 2017, p. 8)—there are few examples of how to blend PBL, CT, Appraisal, and the KF into successful teaching plans that clearly reflect the values of the WIDA framework and align with ACTFL as well as TESOL standards. Our next section will present two teaching ideas we hope will address this need.

Blending the Theories into Practice: Two CT Projects

The following two project ideas utilize the KF in both the planning and integration stages so that students can hone their own understandings of the various thinking skills and language of the KF as they explore content and the way this content is presented. The project ideas will draw attention to CT and the language being used to project a stance and influence an audience. Note that these projects also serve to address the other four Cs of the Cambridge Life Competencies: creativity, collaboration, communication, and potentially digital competencies (based on the teacher's and students' technological knowledge and

opportunities). The first project—Truth in Advertising—is more teacher-controlled as students are directed to watch a short "advertisement" of a make-believe animal and discuss what makes the ad believable. The second project also relates to advertising, using a KF heuristic to plan an advertising campaign of the students' choice and to make linguistic choices that can subtly and/or strongly influence people's decisions. Each of these project ideas will be described in sufficient detail for teachers to implement age-appropriately. It is our hope that these two projects will spur our readers on to create further teaching plans using similar concepts.

Project 1*: Truth in Advertising*

The goal for this project is to have students question what they see and hear and to gain a basic understanding of how information, both oral and visual, can be used to persuade people to accept the content. By engaging in this project, students can potentially develop language and content that can be used to think critically beyond the project. Note that what we consider to be the "pre-project" stage of this idea can be a very good teaching plan on its own, one that can be used with younger students.

1. Pre-project 1 (establishing what students bring to the lesson): Engage students in a discussion about the kinds of advertisements they see on TV and whether they believe what they see. More importantly, ask why they believe certain ideas and not others, drawing out whether they notice anything about the language of the ads.
2. Pre-project 2 (presenting an ad for discussion): Show students an ad that can be analyzed easily for believability. One recommendation is to show an advertisement by Concerned Children's Advertisers (https://www.youtube.com/watch?v=TijcoS8qHIE).
3. Pre-project 3 (discussion of the ad): First, ask the students if they believe the information presented in the advertisement, "House Hippo Commercial." Ask why or why not, eliciting what it might be about the language or the images that cause them to respond as they do. Create a KF and elicit the information to put in the boxes (see Figure 1.). You may want to treat the pairs together if your students have not previously been introduced to the KF so as not to confuse them when the goal of the lesson is not affected by the finer distinctions of the KF. The differences can be introduced gradually.

Figure 1. *House Hippo*

CLASSIFICATION	PRINCIPLES	EVALUATION
• North American House Hippo • favorite foods are • nests made from…	• if provoked… • …to search for food	• looked really real • couldn't be true • it's good to…
• are timid • are rarely seen • nests are soft	• comes out at night • defends territory • builds nests • sleeps 16 hours a day	• you knew • think about • ask questions
DESCRIPTION	**SEQUENCE**	**CHOICE**
Also note that according to **Appraisal** theory, the mode of the text in the ad (almost all statements) provides a stance of authority, much like science texts do through information reports, thus leading to an evaluation of truthfulness. Moreover, the only examples from the right column are from the woman's commentary on the ad.		

4. Pre-project 4 (comparing the ad to what is real): Have students search for hippopotamuses and create a KF like the one that was constructed from the ad in Figure 1 (the evaluation and choice boxes are not needed). Elicit from the students the differences between the ad and real hippos and elicit the types of questions that students can ask to ascertain the truthfulness of the ad.
5. Project (creating an ad to bring awareness of false information): Have students work in groups (collaborative) to identify something they would like to "twist" in a similar way to house hippos and have them create a text for a similar ad (this task requires creativity as well as collaboration) using information they can create from searching the Internet (digital competence). Depending on the technological and/or artistic abilities, student groups can create a multimodal ad to show their peers. Note also that in creating the ad, they are practicing the language of information reports (see Derewianka, 1990).
6. Post-project (presenting the ads to others): Have students present their ads to their peers and get peers to comment on the language that helps them decide if the material is believable or not.

Project 2: *An Advertising Campaign*

The idea for this as a CT project comes from recalling English-as-a-second-language students creating ad campaigns using an activity from George Rooks' English-as-a-foreign-language teaching book, *The non-stop discussion workbook: Problems for intermediate and advanced students of English* (Rooks, 1981). Rooks' unit (pp. 64–66) provides a template for students to follow as they attempt to design a new mouthwash and plan its marketing campaign. As a CT project, the rationale is to develop students' CT skills by offering opportunities to recognize and use the language of Appraisal while understanding how the language of the various thinking skills works together to help construct how we interpret the content. Whereas our previous project idea targeted the recognition of false information and how it can be presented to convince an audience that a particular view is truthful, this project more strongly utilizes the language of persuasion and how marketers can influence consumers. The second project can be introduced later than the first, with the teacher reminding students of concepts from the earlier project with the goal of eliciting students' broader understandings from their personal experiences. It can also be offered to older students on its own.

1. Pre-project 1 (examining other advertising techniques): Students' attention should first be drawn to existing ads. Have them work in groups to find television ads that they find enticing and to discuss and decide why they are appealing (this uses critical thinking, digital competency, collaboration, and communication). A simple KF for each of these ads the groups have targeted can provide a solid foundation to see if there are similarities among the ads in how products are presented. Creating a KF diagram also draws students' attention to the language that constructs each of these thinking skills, connecting this language to the content of the advertisements, a task advocated by the WIDA as teaching academic language within age-appropriate content. The following questions can be useful to guide students in the creation of these KFs:
    a. How are the products classified—what words tell you this?—or are you left to figure out what kinds of products they are? (Classification)
    b. What words are used to describe the products? Are these words evaluative in some way? If so, how? Or are they "neutral"? (Description)

c. Are there any "conditions" on the products, such as "If you have/like X, our product does Y"? Are these explicit (through language) or implicit (through images)? (Principles) Are these conditions effective, do you think? (Evaluative)
d. What is the general sequence of events regarding the product or the ad? (Sequence) Do you think the sequences that you have identified are effective in presenting the product? How? (Evaluation)
e. What is it about the ad that makes you want to buy or use this product? Is there anything there that makes you hesitate or question the product? (Choice)
f. Based on the ad you chose, what do you think about the quality or usefulness of this product? What words or images cause you to think the way you do? (Evaluation)

The groups of students now have a small database of KF-organized information that they can use to make decisions about the product that they want to design and create ads for.

2. Project (Create a product and advertisement): Now that the groups have engaged in critical thinking about the various ads they have watched and analyzed, their creative project is now to use the information about evaluative language (and potentially images) that they have collected through their analysis to create an ad for the product they have chosen to design. This project involves creativity, collaboration, communication, and digital competence as well as their growing understanding of critical thinking to successfully complete. The students' final products for this project can be a "magazine ad" as well as a 30- to 60-second "television ad."
3. Post-project (Presentation of the projects): Students present their products and advertising campaigns. Once all presentations have been done, the class together can discuss the types of questions identified above to reinforce the concept of thinking critically.

Depending on time and interest, you may have students make both a hard-sell and a soft-sell ad and discuss the differences between the two, or have the class rank the above two types of ads in terms of which was the most and least compelling and—most importantly—*why* they think so based on what they heard.

Conclusion

Our chapter has defined and blended the concepts of Critical Thinking, Project-based Learning, SFL's Appraisal Network, and the Knowledge Framework. Using these, we have offered two ideas for projects that can help students attend to the linguistic resources of evaluation and learn to question what they see and hear, making critical thinking both the topic and the goal of the two projects. In other words, we have created our projects to involve age-appropriate subject matter to develop language and content in a functional way that also teaches students to think critically about what they hear and see around them, thus adhering to the WIDA framework and TESOL (2019) standards by offering a way to hone students' understanding of language. Along with critical thinking, our projects also incorporate communication, creativity, collaboration, and potential digital competence, thus addressing the five Cs of the Cambridge Life Competencies Framework (2020). Our two projects are suitable for a course in social justice, an English class, or a program for pre-service teachers, but we acknowledge there are many projects that can be developed for any content, given that all language presents a stance, even that of science and history, as Unsworth (1999) shows. Below we will present several general classroom activities that we hope can lead to the creation of further projects for our readers, projects that can incorporate functional language use and age-appropriate subject matter using the Knowledge Framework in a way that improves students' ability to think critically.

Group **debates** on any topic can be designed as projects with the content organized through the KF: Persuasion, which is typically at the heart of debates, involves stance, and teachers can build in a post-debate discussion on the types of arguments and language that may have convinced the audience to side with one argument or the other. By making the debate an **online debate,** digital competence can be targeted as well as critical thinking, creativity, communication, and collaboration**.** A **mock court** is another creative and collaborative project that can invite critical thinking and the language of evaluation, and it can be especially useful for learning history from a critical perspective. CT can also be incorporated into **jigsaw** projects**,** where each student or pair or students researches one aspect of a text or problem and then comes together with other students or pairs to discuss the text or solve the problem. It can also be made salient through **role plays** and **interviews** in which students "become" a famous person (alive or deceased) and classmate reporters

interview them. These types of projects can also promote critical thinking along with content learning about that person's life.

Language exists to allow us to interact and construct our understandings of the world, and language pedagogy should thus reflect a meaning-focused approach that targets students' real-world linguistic and content needs and hones their ability to question ideas they do not comprehend or believe. Project-based learning addresses these requirements, and when combined with Mohan's Knowledge Framework, it adopts an established linguistic theory designed especially for the acquisition of language, content, and thinking skills. Adopting project-based learning using the KF, such as the ones we have proposed in this chapter, provides creative educational opportunities to focus on the development of critical thinking skills simultaneously with language and content. Such a functional language-based approach not only fits well within the goals of the WIDA (2020) and TESOL (2019) standards, but also serves to teach students how to interact with the content they will hear and read about daily in their futures, both in and out of classrooms.

Further Activities for Varied Age Levels

1. Show an example of a television advertisement on identity theft. Have students find aspects of the language (grammar, tone) and visuals that create the feeling that these advertisements are a form of "scare tactics" to buy the product.
2. Choose an animal. Make a T-chart that depicts "true" descriptions on one side and "biased" descriptions on the other. Discuss the differences and what the effect would be of having biased descriptions in an information report. (E.g., how do you draw "adorable" and "cute"?)
3. Choose a sport that the students are interested in and enthusiastic about. Find (or create) short recounts of a game written from the perspectives of the students' team and the rival team. Have the students determine which perspective matches which team. What words can help them figure this out?
4. Have students analyze an information report at their age level using the Knowledge Framework. Discuss how choice and evaluation are used (if they are) and why this would be the case (information reports are typically very "factual"). Engage in a discussion of what the information report would look like if there were too many evaluative words. Perhaps have the students alter an information report to write an evaluative one (see activity 2 above).

5. Choose a few letters to the editor and identify language that shows bias. Engage students in a discussion of why it is important to notice this type of language when they are passing information to others or voting. Is what they read always correct?
6. Examine social media to see how evaluative language is being used. Which thinking skills in the Knowledge Framework are most used? Why might this be the case (i.e., what is the social media text attempting to do?)
7. Have students write a letter of recommendation for themselves. This genre is supposedly persuasive (although subtly so), so what language is used to achieve this? A good way to illustrate what NOT to do is to have fun going "over the edge" with evaluative language. (Younger students can analyze letters that the teacher has written about other characters, such as Santa Clause or a Halloween witch or a popular cartoon character, and have students match the character with the letter and justify how they know.)

Questions:

1. How would you summarize the KF pairings of classification and description, principles and sequence, to students?
2. Which of the above lesson ideas have you taken part in? What do you remember about it and how did it promote Critical Thinking (CT)?
3. What pairing in the KF is Appraisal Theory most likely to apply to and why?
4. How have you discussed "truth in advertising" with students in the past? How did you have them engage with the language of those texts?

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Chapter 7

Alternative Frameworks for Incorporation of Generative AI Usage as a Functional Approach to Language Development*

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Objectives: Educators will be able to…

- Understand what Generative AI platforms do.
- Examine perspectives for and against use of AI for academic writing.
- Evaluate ideas on increasing student motivation to write so that they do not depend upon AI for writing.
- Determine how they might use AI in the classroom.

Introduction

Skills in academic writing form a core foundation of all language classes and aim to facilitate communication, documentation, and knowledge dissemination. The intrinsic connection between reading and writing makes their combination an effective route for achieving specific learning goals. It is important to recognize the intrinsic connection between reading and writing, based on shared knowledge and cognitive processes, and utilizing writing as a means to gain insights into reading and to improve comprehension of texts produced by others (Graham and Hebert, 2010). However, research indicates that writing motivation decreases as students' progress from one year of school to the next, and further declines through middle and high school (Bruning and Horn, 2000; Koster et al., 2015). Gallup surveys show that students' general motivation for schoolwork continuously drops when progressing from elementary to high school (Gallup 2013), and the percentage of engaged students diminishes from 74% of the student body in fifth grade to 34% at the time of high school graduation (Gallup, 2017). With the decreasing motivation to write English essays throughout their academic journey, students may lose sight of the value of writing skills or view them as unimportant (James, Jao, and Berninger, 2016). Teachers of K-12

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classes dealing with issues of student engagement in the classroom are further concerned by the use of generative Artificial intelligence (GAI) tools in classroom writing.

Generative AI tools—such as Chat GPT, BARD, T5, BLOOM, GPT3, OPT, BERT, and Roberta—and their use in education raise questions about their implications for educational paradigms. The most popular current Large Language Model (LLM) Chat Generative Pre-trained Transformer, or Chat GPT, following its debut on November 30, 2022, exceeded one million subscribers within a mere week. Large Language Models or generative AI tools work on unsupervised learning methods, as they dig into the data that is fed to them by their developers and users and rearrange it into meaningful sentences without checking for its veracity or authenticity. Their common aim is to generate, summarize, and translate text based on user prompts (NVIDIA Corporation, 2023). What these generative AI tools primarily do is retrieve English syntax based on a prompt by substituting pattern matching from already existing information and arranging it into an order that makes sense. It is a significant advancement that can produce articles in response to open-ended questions that are comparable in quality to grammatically correct high school essays (Tufekci, 2022).

The debate about using generative AI in the classroom is profoundly polarizing in academia, where some see it as an educational apocalypse and fear of destruction of the education system through AI-assisted cheating in assignments (Chatterjee & Dethlefs, 2023; Stokel-Walker, 2022). Specifically, it may lead to the obsolescence of certain assessment types, such as essays (Zhai, 2022). Others view it as a renaissance that provides equal opportunities and accessibility for educators and students alike to access information and automation by enhancing the footprint and quality of education (e.g., Pavlik, 2023; Zhai, 2022).

The issue of using generative AI in the classroom is extremely critical for multilanguage learning. Educators have to navigate issues to ensure students are involved in writing, while also providing access to information and technology to develop language skills in the presence of these generative AI models. Teachers are concerned about academic integrity and cheating with the help of GAI, which further weakens the purpose of education and devalues college degrees (Greitemeyer and Kastenmüller, 2023). However, excluding this technology from the classroom is not a solution but further poses a risk of unsupervised use, hindering access to current technology, and unnecessary surveillance.

Impacts of Generative AI Ban in Classroom

While Generative AI is a cutting-edge technology of its time, it is not free from errors and biases. It is bounded by the data it is trained upon, which may promote human intervention that harms marginalized groups by promoting popular culture data (Benjamin 2019; Kolko, Nakamura, and Rodman 2013; Samuel 2021). Another issue is the privacy of the data, as it collects the data from its user prompts, which raises potential risks of ethical issues including user data privacy and security, prompt injection, malicious exploitation by attackers, and data poisoning. The current version of Chat GPT also remains susceptible to its inaccurate responses or "hallucinations", which poses serious risks for individuals relying on AI for fact-checking, or other decision-making processes (Wu, Duan, and Ni, 2023). User privacy concerns related to generative AI use (Tilley and Kruppa, 2023) include confidentiality, breach of data (Ray, 2023; Sparke, 2023), data biases (Nelson, 2023), the marginalization of minoritized identities (Ansari, 2023; D'Agostino, 2023).

Educators who are in favor of integrating Chat GPT technology in the classroom argue that we have no choice but to embrace these technological changes and explore how to integrate the tools into existing pedagogical philosophies and ethics. They advocate for modifying curricular methods and creating assignments that need human voices to ensure students are reflecting on real-world events (Gordon, 2023). Miller (2023) contends that if we have not banned calculators in math classrooms, then it is unlikely that generative AI tools could be eliminated from the classroom. Like math, we have to shift the focus to using technology as a tool and not a substitute for human capabilities of producing new knowledge. He suggested that teachers should alter their assignment design to create more engaging writing assignments (Zalaznick, 2023). Bin-Hady et al (2023) argue that Chat GPT can be helpful for multi-language learners as it is more interactive and engaging and creates a customized learning experience based on student's interests by providing lots of information, giving interactive feedback, offering personalized learning experiences, and motivating language learners. This helps students reach their language learning goals more quickly and effectively when used properly while understanding the ethical rules (Bin-Hady et al., 2023).

Banning generative AI would be a fruitless arms race against technology to avoid cheating and plagiarism that may create an inaccessible, discriminatory learning experience (Trust, 2023). ChatGPT does not signal the end of high school English class but accelerates

the long-awaited need to end the pursuit of formulaic, subpar writing as an objective for students and educators (Greene 2022). Hence, educators have to reframe their writing assignments to create long-term value in writing practices and make writing closer to students' experiences and reflections to create motivation for writing as an activity and not as a chore. As John Warner said, "Chat GPT cannot kill anything worth preserving", and banning generative AI tools can create a void between the real world and academic practices, which not only gives the student the impression that they have been surveilled but also insinuates that that a writing assignment is not worth their efforts (Warner, 2022a).

Hence, to integrate generative AI technology into classrooms in meaningful ways, it is essential to educate teachers and learners on the ethical use of this tool. Students should be informed that these tools keep their data and may produce false results; it is not a tool like the human brain which operates with little information and uses language to predict, create knowledge, and reason, but rather a sentence regurgitation and imitation machine (Chomsky, Roberts, and Watumull, 2023). Educators can leverage Chat GPT as a teaching assistant to introduce innovative approaches to education and personalized learning experiences (Furze 2023; Mollick and Mollick 2023). Given the limited resources available at educators' disposal, educators could use generative AI tools to get assistance in designing interactive and personalized assignments to save time and focus more on facilitating discussions, problem-solving, and higher-order thinking skills, while Chat GPT handled information retrieval and basic content delivery. Ethan Mollick and Lilach Mollick (2023) argue that teachers can leverage AI to incorporate five evidence-based teaching strategies---including providing multiple examples, offering varied explanations, identifying and addressing misconceptions, promoting distributed practice, and incorporating low-stakes testing---which can significantly improve instructors' lesson plans and enhance student learning outcomes. Large language models can provide valuable assistance to varying extents, and through rigorous evaluation and supervision, GAI can generate explanations, examples, practice exercises, and diagnostic questions, offering crucial support to instructors. This, in turn, enables educators to reduce the time spent on material development and allocate more of their focus toward their students' needs (Mollick and Mollick 2023).

It is worth noting that Chat GPT records personal data, hence it would be unethical to get help from this tool to grade students' assignments containing their data. Similarly, if students have used this tool to assist in their writing, they should mention which parts of their

writing were generated through AI, as the unchecked use of generative AI is detrimental to learning (The Lancet Digital Health 2023).

It is important to promote collaboration among stakeholders including teachers, students, institutions, and the broader society. The incremental integration of these tools through a collaborative effort of building trust and transparency between students, teachers, and other stakeholders is needed to promote equity and access to all (Zalaznick, 2023). It is essential to have a conversation about integrating such technology into the classroom, informing students about its benefits, and drawbacks, and setting up a generative AI syllabus policy. As educators, we need to emphasize to our students that relying solely on Chat GPT or any AI language model is not a substitute for their writing abilities. We must encourage them to develop their writing skills, engage in meaningful experiences, and use AI tools as aids rather than as a substitute for writing.

Generative AI is not going anywhere, and we cannot hide from it. Therefore, it is important to adopt techniques that aim to enhance students' writing skill development, and motivation and promote transferable skills while providing access to the technology.
The aim here is to delve into the integration of ChatGPT within existing pedagogical models of teaching multi-language learners, emphasizing the enhancement of student motivation, the infusion of the human element into writing, and the implementation of scaffolding techniques in writing assignments through the lens of the 2020 iteration of the WIDA (World-Class Instructional Design and Assessment). The WIDA framework underscores principles of equity, content-language integration, collaboration, and equal access in the utilization of technology. WIDA places a strong emphasis on language development while embracing diverse cultures, thereby fostering effective communication skills across academic disciplines. Central to our discussion is the Writing Across the Curriculum (WAC) concept. This pedagogical approach serves as a cornerstone for nurturing language proficiency and critical thinking while promoting autonomy, collaborative skills, and inclusivity. WAC boldly asserts that writing transcends disciplinary boundaries, a perspective further enriched by WIDA's identification of four key language uses: narrate, inform, explain, and argue. The aim is to facilitate the development of effective communication skills tailored to specific contexts, thereby enhancing student engagement and independence. This approach encourages students to assume greater agency in their learning, fostering a more collaborative and inclusive educational environment. This recognition motivates students to take ownership of

their writing tasks, challenging traditional teaching methods and necessitating innovative approaches. Hence, this chapter aims to provide the existing approaches to incorporate generative AI tools in the classroom in a way that promotes the value of writing assignments, motivation, accessibility, agency, and learning through different technologies while also cultivating accountability.

Writing Assignments as a Social Justice Approach

Generative AI, if used as a supplemental tool, while focusing on students' reflective writing, and the teachers' role as a guide fosters student motivation and ownership of their work, making them less likely to outsource tasks to generative AI tools (Warner, 2023). To achieve this, educators should design assignments that students inherently value and shift the focus from grade improvement to attitude transformation. To enhance students' interest in writing, teachers should design inherently human assignments, like reflection writing where students can express their personal experiences and ideas rather than following a strict prompt. It is also important to give students the liberty to choose a topic which they find interesting and are curious to write about, and/or that is current and has some social implications such as the local traffic problem, or school cafeteria services. Encouraging curiosity, openness, diverse perspectives, and ethical writing principles is vital in teaching students how to write (Warner 2022b).

Creating Motivation to Write to Avoid Reliance on Generative AI Tools Solely

Many students do not see writing as a worthwhile skill to develop (Herman, 2022). Therefore, it is an important step for language teachers to create motivation in students to do the writing assignments. William Glasser's theory outlines five fundamental motivational needs: survival, belonging, power, freedom, and fun. While survival and belonging align with two aspects of Maslow's hierarchy of needs, power, freedom, and fun introduce unique dimensions that are crucial in the context of student and teacher motivation (Benson and Dundis, 2003). Power signifies a sense of empowerment, self-worth, self-efficacy, and accomplishment, along with the recognition of one's competence and contribution. Freedom represents the need for independence, autonomy, and the freedom to make choices, create, explore, and express oneself. It encompasses both physical and psychological autonomy, providing students and teachers with the liberty to generate thoughts, explore creativity, and share their creations within the learning framework, and further, their ability to find pleasure in

tasks, maintain a sense of humor, engage in hobbies, and experience excitement in work or leisure activities. The WIDA framework also emphasizes social-emotional learning, which aligns well with Glasser's emphasis on power, freedom, and fun, to make the writing experience a more contextualized learning exercise and maintain a functional approach to language development.

It is important to focus on students' motivation to write where the teacher's role is as a facilitator rather than an instructor in the process of writing. To create student motivation in writing assignments, it is worth applying the Expectancy value model. The Expectancy-Value Theory of Motivation, explored by various authors, provides essential insights into students' motivation in educational settings (Wigfield and Eccles, 2000). It consists of three core components: expectancy, value, and cost, which play pivotal roles in determining motivated behavior. Expectancy-value models are not new in the academic realm. Authors like Lewin et al. (1944), Atkinson (1958), Eccles et al., (1983), and Wigfield & Eccles, (2000) have championed various versions of Expectancy-Value models to understand better students' choices, persistence, and performance in education. According to Eccles's (2000) model, the Expectancy-Value Theory of Motivation posits that a person's motivation is influenced by the perceived value of a task and the likelihood of succeeding it. If students don't value it, regardless of how well it is presented, they are unlikely to fully engage with it.

The Expectancy-Value model is characterized by three key elements. Firstly, it centers on psychological motivation by examining an individual's subjective beliefs, encompassing past experiences of success and failure, personal goals, self-concept, and the influence of various socializing agents like parents, teachers, peers, and schools. The expectancy aspect of this model addresses the question, "Am I capable of completing the task?" When students believe in their ability to accomplish something, they are more inclined to engage in that behavior. Eccles et al. (1983) emphasized the strong correlation between expectancy and related constructs tied to students' convictions about their task-completion abilities, such as self-concept of ability, task complexity, locus of control, and attributions. The second element involves the value motivation associated with the task, emphasizing the transferable value of the acquired skill to other areas of learning. This aspect explores how the skill obtained can be applied in diverse contexts (Eccles et al., 1998). Kenneth E. Barron and Chris Hulleman revised the Expectancy-Value-Cost model and added cost as a distinct component. Their framework suggests that individuals are more likely to be motivated to engage in a task or

behavior when they believe they can succeed (expectancy), see value in it (value), and perceive minimal barriers (cost) to their engagement. They frame cost as multidimensional with at least four sub-components: effort related to the task, effort unrelated to the task, loss of valued alternatives, and negative psychological experiences. In addition, the effort and resources required for an activity are costly only when they are perceived to be too much by a student. In the context of writing assignments for multi-language learners, understanding and optimizing these components can lead to more effective teaching strategies and enhanced student motivation.

The expectation of making progress in writing. Students' progress in a task significantly influences their motivation. When students believe they can succeed in a given task, they are more likely to be motivated to engage with it. This component of this value-expectation theory addresses the question, "Can I do the task?" This does not mean that the task is easy or challenging but that they see a guided path toward improvement. Teachers providing formative feedback showing that there is a path to progress rather than giving students a lot of corrections on their work will enhance students' motivation when they see themselves meet the expectations of progress over time.

In the 1990s, Pajares and his team conducted research on writing self-efficacy. They studied how confident students felt about their writing abilities. They found that students who felt more confident in their writing skills tended to perform better when writing essays. They created a test called the Writing Self-Efficacy Scale (WSES) to measure this confidence. At first, they thought it was one big confidence measure, but later, they realized it had two parts: one for basic skills, like spelling and punctuation, and another for more complex skills like structuring paragraphs and essays. Providing students with small, achievable writing tasks builds their confidence when they see themselves progressing from one point to the next.

Creation of value of writing through engagement in the classroom. The perceived importance and desirability of a task impact students' motivation, with intrinsic, utility, and attainment values all playing roles. The intrinsic value is cultivated if students enjoy writing for its own sake. If the students are given writing assignments where they feel connected, they are more likely to do the task by themselves. For example, if students are given the task to find out more about a social issue that they feel strongly about, they would likely write about it more passionately compared to a topic from their textbook (Warner, 2018).

Students may see the writing task as interesting if they see a utility value associated with it. If they can see that learning writing skills will help them achieve broader short-term or long-term goals, they will be more likely to engage in the writing process; for instance, if the student sees that writing skills not only help them to pass the course but are also helpful to them in other academic areas. If they see writing as a transferable skill that benefits them in the real world, they will be more engaged in learning this skill.

Another value that is identified in this framework is attainment value. This value relates to a task's ability to affirm a valued aspect of a student's identity and meet their needs. The value component addresses the question, "Do I want to do the task?" For instance, a student who values seeing social change in society because they feel it helps them better understand the world may be more motivated to write about social issues. When a student feels that a writing assignment is connected to their experiences, that assignment will be a better facilitator of learning writing than the boring five-paragraph essay (Warner, 2023).

Assessment of cost to the effort. In Kenneth E. Barron and Chris Hulleman's revised Expectancy-Value-Cost model (2014), cost represents the perceived barriers or obstacles that may hinder student motivation to engage in a task. These costs can be multidimensional and include factors like the effort required, time constraints, the loss of alternative activities, and negative psychological experiences. They further divide the cost into effort-related cost, effort-unrelated cost, and psychological cost. According to this framework, effort-related costs refer to the perceived amount of physical or mental effort needed to complete a task. Effort-unrelated costs, on the other hand, are costs associated with activities that may not directly relate to the task but compete for the individual's time and resources. Lastly, the psychological costs deal with negative emotional experiences or psychological burdens that may arise from engaging in a task. The cost component addresses the question, "Am I free of barriers preventing me from investing time, energy, and resources into the activity?" For example, if a student perceives that studying for an upcoming exam will require a significant amount of effort and lead to stress, they may consider these as costs that affect their motivation.

Importance of Formative Assessment and Feedback

Formative assessments support ongoing learning, helping both instructors and students identify areas of improvement, and are generally ungraded or low-stakes. It enhances student motivation and self-directed learning. Interactive classroom activities are good examples of developing formative assessment and feedback. Summative feedback, on the other hand, comes at the end of a module or semester and is often tied to grades. It assesses what students and the class have learned and can inform course design related to final essays and research reports (Tufts University, 2023).

John Warner (2018) argues that it is important to move from summative to formative assessments in the age of generative AI. Instead of giving a final project assignment, it is better to move the writing assignment to classroom activities of reflection writing and breaking the writing task into several initial drafts, where a teacher provides feedback aiming to focus on developing transferable writing skills and achieve student learning and progress over time and not for the mere final grade. The formative feedback builds student confidence and interest in doing work (Warner 2018).

Adoption of Generative AI in the Classroom

Traditional teaching methods have often relied on static content and established curricula that may not always keep pace with the rapidly evolving body of knowledge in various fields. As new information, research, and insights emerge, educators must adapt their teaching strategies to ensure students are exposed to the most up-to-date and relevant information. As John Sener argues in "The Seven Futures of American Education," education must embrace technology incrementally, focusing on knowledge, access, and authority to enhance learning outcomes. His cyberization of education emphasizes revitalizing the teaching and learning relationship through learner-generated content, event-anchored learning, and using technological tools while broadening the institutional enterprise to accommodate diverse learners and prioritize knowledge creation. First, this can be accomplished by revitalizing and re-empowering the teaching and learning relationship by including learner-generated content and knowledge. Some strategies include event-anchored learning; social and individualized learning with scale and depth; techno hooks such as augmented reality, virtual worlds, and gaming; formative feedback; and scaffolding assignments. Second, revitalizing the institutional enterprise by broadening the merit system

by incorporating prior learning assessments and portfolio-based credits, accommodating a diverse range of students through stackable credentials and competency-driven methodologies, extending the role of education in knowledge creation (with a specific focus on utilizing student work) and establishing new institutional evaluation systems (Sener, 2012).

Instead of surveilling student use of generative AI, teachers can allow students to explore this medium to improve their writing by using it to brainstorm ideas and make an outline for their writing or for forming or editing the initial draft as a collaborator or reviewer tool. Teachers can give assignments to critically analyze the flaws in the initial draft produced by the generative AI tools and how students would have done it differently (Cardamone 2023). For instance, we can consider using AI-based writing tools to assist students with idea generation, grammar checking, and language suggestions. Additionally, AI-powered research tools can aid students in gathering relevant information and sources or personalized assistance with language learning which can be vital to a multilingual learner new to a language.

Summary

The integration of generative AI, such as Chat GPT, in the classroom presents a complex and polarizing issue. While there are concerns about cheating, privacy, and data biases, there are also opportunities for enhancing student engagement, motivation, and learning outcomes. Banning generative AI in the classroom is unlikely to prevent its use and may lead to a void between the real world and academic practices. Instead, educators should adapt their teaching strategies to incorporate these tools effectively. The successful integration of generative AI in the classroom requires a thoughtful, ethical, and student-centered approach that empowers learners to develop valuable skills and competencies. This can be achieved by redefining the teaching and learning relationship through learner-generated content, event-anchored learning, and the literacy of ethical use of technological tools, training teachers and students on its proper use, and creating a syllabus policy for its integration. Instead of surveilling students, educators can encourage students to use generative AI tools as collaborators or reviewers, and even challenge them to critically analyze the output of these tools.

The value of writing assignments can be enhanced by making them inherently interesting and connected to students' experiences, promoting intrinsic, utility, and

attainment values. Efforts to motivate students to write should consider elements like self-efficacy, freedom, power, and fun. The Expectancy-Value Theory of Motivation can help increase the value in writing assignments and reduce perceived costs for students. Grading and feedback should focus on formative assessments and feedback, helping students develop transferable writing skills and build confidence.

Questions:

1. The author points out some of the shortcomings of AI's writing. What are they?
2. Do you agree with the Expectancy Value Theory? Has there ever been a time when you struggled with Expectancy, Value, or Cost in relation to school tasks?
3. How does paying attention to motivation for writing promote equity and/or accessibility?
4. The author suggests reviewing and editing AI generated writing. Have you engaged in such an activity and what did you find?
5. Discuss an experience or lesson in which AI was important to the task.

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Chapter 8

Unleashing the Power of Multilingual Minds: Translanguaging for Deeper Learning

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Objectives: Educators will be able to…

- Define translanguaging and explain its purpose.
- Identify the benefits of translanguaging including cognitive, cultural, and interpersonally.
- Discuss challenges to translanguaging including lack of acceptance, need for pedagogical shifts, and assessment.
- Gain ideas for incorporation of translanguaging into classrooms.

Introduction

As social beings, humans communicate to stay connected with the inner and outer worlds. To communicate, we need a medium. Language is the medium in which we can communicate with one another. Each language comprises several features and characteristics: alphabets, sounds, grammar, and linguistic variations. Dialect is a specific version of a language used by people in a specific region. According to the Cambridge Dictionary (n.d.), dialect is a '"form of" language that people speak in a part of a country, containing some different words and grammar, etc. “The new" to speak with one another is prevalent in all situations and circumstances irrespective of the dialect and languages people speak.

Similarly, when people do not speak the same languages, especially in the bordering areas of different countries, pidgins are created and used by the inhabitants of such areas. Cambridge Dictionary defines Pidgin as a language developed from a mixture of two languages. It is used to communicate with people who do not speak each other’s languages.

If we talk about the most common language speakers use globally, English ranks in the number one position. We all know that the English language is widely used, and most countries use it as a primary language for a medium of instruction in academia and official and professional communication. People travel worldwide and migrate to first-world countries for academic and professional opportunities to live progressive and successful lives. That is why they intentionally work on their English Language skills to achieve their educational and career goals. However, the journey to learn English varies from easy to extremely complicated.

English Language Learners (ELLs) who have used English from elementary grade to higher education tend to have higher comprehension and retention levels in English-only environments than the ELLs who have had limited exposure to English in their homes and communities. The barriers resulting from limited English proficiency affect the overall personal, academic, and professional growth. The need to educate more teachers to work with students who speak a language other than English in the home has led many states to adopt the WIDA Framework and standards. The 2020 Framework revised the Guiding Principles to include the concept of "Translanguaging". This idea is situated within the following principle: "9. Multilingual learners use their full linguistic repertoire, including translanguaging practices, to enrich their language development and learning" (12). This chapter will provide a definition of translanguaging, discuss the increase of multilingual students in classrooms, examine the benefits of translanguaging and multilingualism, articulate some of the challenges to translanguaging, and advocate for translanguaging to become part of instructional practices from the earliest years of education to the higher education institutions. The chapter ends with an appendix of ideas on how teachers can integrate translanguaging practices into their classrooms.

What is Translanguaging?

According to Cook (2022), translanguaging means information reception through one language (e.g., English) and be able to utilize it by the medium of another language (e.g., Welsh). The speaker must understand completely the meaning before they can use the information successfully (Williams, 1996, 64). Similarly, in order to use one's dialect i.e. one's linguistic repertoire, irrespective of socially and politically defined labels or boundaries (Otheguy et al, 2015, 297), multilingual language users facilitate complex social and cognitive

activities by deliberate application of multiple semiotic resources to act in a dynamic way (Garcia and Li, 2014).

Translanguaging can best be used by transnational individuals PK-12 and adults as a trend as a methodology to be utilized and applied in different teaching and learning contexts. This is why, translanguaging refers to a process that creates trans-spaces and trans-subjects in a more technical setting, i.e. the linguistic world. These spaces and subjects have the potential to transform the broader sociopolitical order including individual subjectivities, social structures, and cognitive frameworks. Furthermore, translanguaging aims to set free the shackles of the imposed monolingual and monoglossic ideologies (Garcia & Wei, 2014) which have restricted and confined language and bilingualism for a long span of time.

The process which is mentioned above can be simplified by understanding that subjects who can be language users who can be either one of these e.g., student, teacher, parent friend or any person, translanguaging offers variety of contexts in different languages. This is why translanguaging is crucial in enhancing language freedom from society's pressures. As Ofelia Garcia says, "a monoglossic language ideology sees language as an autonomous skill that functions independently from the context in which it is used. U.S. schools ignore how English and Spanish are used" (Garcia 2019). Hence, one should not underestimate the multidimensional and multifunctional approach of a bilingual or multilingual brain because it works to absorb and attain new information through context on variety of language networks and grammatical frameworks (in the form native or different languages) at the same time.

Moll et al, (1992) emphasizes on the multilingual phenomenon of translanguaging as "funds of knowledge" in detail compared to the traditionally understood concept as first language (L1) of student when speaking in second language (L2) context. Translanguaging surpasses both home language and school language or L1 and L2 validating translanguaging that bilingual students' practices are not separated (Moll et al., 1992).

The transformation process of linguistic semiotic repertoire is to improve the phenomenon of transfer (Cummins, 1979), which is recognized as the natural flow of ideas from one language to another by using reading, writing, listening or speaking skills. It is referred as translanguaging so that bilingual speakers leverage (Michaels, 2005) in meaning-making.

Translanguaging in education enables students to move along the continuum of two socially constructed languages by reinforcement of bilingual performances in

correspondence with the standards of their school, homes, and their communities. So, it is essential for bilingual students to emphasize the linguistic semiotic resources in meaning-making and utilizing in their respective contexts whether at the beginning or along the bilingual continuum. This is how their "critical conscientization involves continual reading of the word and the world" (Freire, 1974; Garcia & Wei, 2014) are developed.

Current Trends and Research on Translanguaging

In the context of educational environments, translanguaging can be used as a methodology with students from diverse backgrounds (Garcia & Wei, 2014). Similarly, in different content areas in the secondary schools e.g., Math, Social Studies, Science and English Language Arts, translanguaging is used as a pedagogy as well as in English as a Second Language classrooms. Even though the readiness in using the methodological practices based on translanguaging, these respective teachers are on numerous points of bilingual continuum. Furthermore, it is challenging to educate teachers to strategically and significantly use translanguaging practices. In US, for emergent bilinguals, bilingualism in education is limited in most cases. Translanguaging is found to be predominant pedagogical practice in US secondary schools for immigrants with emergent bilinguals. It is less prevalent in elementary schools except in some bilingual programs. Notably, to develop student's pluriliteracy practices translanguaging as pedagogy is used.

Growth in Linguistic Diversity in Schools

Translanguaging in schools is mostly a product cast to be used in one language or the other if students and teachers utilize and employ translanguaging as a single expanded linguistic repertoire. In bilingual or multilingual learning environments, the question arises if there is a difference between the understanding of valuing both (or more) languages as resources of learning. Even though there is a slight difference between a bilingual and a translanguaging approach to education is transformational (Garcia & Wei, 2014). Students should be empowered to alternate between languages for discussion, assignments, and assessments, promoting deeper learning. Explicit instruction in translanguaging develops metalinguistic abilities and cross-lingual transfer of skills.

As student populations in colleges and universities become increasingly multilingual, translanguaging offers a culturally responsive approach to instruction that values linguistic diversity as an asset. Translanguaging techniques create inclusive multilingual learning

environments where students can fluidly utilize their full language repertoires. Administrators can adopt policies welcoming translanguaging and recruit multilingual faculty. Multilingual signage and events on campus help validate diverse languages. Translanguaging pedagogy coupled with structural changes to affirm linguistic diversity allowing higher education institutions to serve their evolving student bodies equitably. It transforms language differences into tools for cognitive growth rather than obstacles to learning. In an interconnected world, embracing translanguaging is critical to building colleges and universities where all modes of communication and expression are accepted with open arms.

Benefits of Translanguaging for Diverse Learners

Translanguaging unlocks immense benefits for diverse learners, from English language students to those with learning disabilities. By leveraging their full linguistic capabilities, students gain enhanced comprehension of complex material on deeper cognitive levels.

Translanguaging creates culturally inclusive spaces where students' identities are validated not viewed as deficits. Structured scaffolds in courses empower students to grasp concepts and build academic confidence. Translanguaging fosters the automatic transfer of skills across languages for English learners to expedite proficiency.

Students with disabilities can first comprehend the material and express knowledge in their dominant language, removing linguistic barriers. Childhood literacy is strengthened as students associate reading and writing skills with familiar home languages. Simply put, translanguaging allows each learner to thrive on their terms by dismantling the restrictions of traditional monolingual education. Its student-centered flexibility, inclusivity, and responsiveness have profound academic, cognitive, and psychological benefits for diverse populations.

Implementing Translanguaging Strategies

Translanguaging can be effectively implemented through flexible multilingual learning environments, scaffolded instruction, collaborative group work, and other responsive techniques. Teachers should explicitly endorse students leveraging their full linguistic repertoires by allowing linguistic flexibility during activities. Strategic scaffolding, where students assist peers with lower language proficiency, promotes meaning-making across diverse languages. Integrated assignments that enable students to move fluidly between languages according to their needs and preferences validate their identities. Linguistically

responsive teaching strategies like pre-teaching vocabulary in students' languages help build background knowledge. Translanguaging thrives when teachers create collaborative spaces, provide tailored support, and welcome students and ways of expression. The result is deeper learning and engagement with course content, as students can make meaning on their terms. More ideas for translanguaging and videos to better understand the need for it are provided in the Appendix.

Executing Translanguaging for Equity and Inclusion

An asset-based perspective toward linguistic diversity provides explicit instruction to students on effectively using translanguaging techniques that leverage their full linguistic capabilities. Universal Design for Learning (U.D.L.) can be used to improve translanguaging practices in foreign language learning and English as a Second Language classes to co-construct and negotiate meaning by the language learners to foster belongingness and engagement. Translanguaging space and identity can be reinforced by allocating funding, staff, facilities, technology, and other structural resources required to support and sustain equity programs long-term in educational institutions. Also, it can further be strengthened by offering training and development for professors to improve inclusive teaching skills and multilingual classroom management improves learners' motivation.

A pedagogy that is equally in favor of cultural sustainability can be implemented by evaluating current educational policies and procedures to remove systemic biases and barriers negatively impacting underserved student groups. Moreover, teachers should work directly with students to gather insights about their needs and experiences to inform diversity, equity, and inclusion efforts in a culturally sustaining pedagogy.

Benefits of Multilingualism

Prior to the 2020 WIDA Standards Framework, the focus of the Guiding Principles was bilingualism which refers to the ability to speak two languages fluently. Multilingualism may include three, four, or even more languages. In today's world, multilingualism is becoming gradually more valuable. It is estimated that more than half of the world is bilingual or multilingual (“Beyond Bilingualism”). Since the prefix “multi” means “more than one” and is, thus, the moniker of “multilingual” is inclusive of a bilingual person. Multilingualism has several benefits, and these are briefly explained before turning to challenges to Translanguaging.

Multilingualism has cognitive, creative, focus, learning, and interpersonal advantages. Multilingualism is linked to improved mental flexibility, multitasking, problem-solving skills, and protection against cognitive decline. Regularly using multiple languages exercises the brain for cognitive benefits over the lifetime. Multilingual employees give companies competitive advantages when expanding globally through better communication, negotiations, partnerships, and innovation that is more likely culturally appropriate because multilinguals inform the creative process. Bilingual children demonstrate better academic performance, communication, creativity, cultural awareness, and empathy. Thus, bilingual adults have increased concentration and learning skills that are developed through the schooling years. Being multilingual allows people to connect with diverse individuals from different linguistic and cultural backgrounds. This is especially beneficial in today's world where such interpersonal skills are needed. Additionally, multilingualism can enrich life experiences through travel, culture, and broadened perspectives. It also promotes empathy, understanding, and appreciation of other cultures.

Acquiring New Languages through Practices

The greater a student's language practices, the easier it is, in general, to learn new language skills. Figure 1 expands on this idea with descriptions of Emergent, Dynamic, Adaptive, and Complex language practices in multilingual children.

Figure 1.

Emergent	Dynamic	Adaptive	Complex
A child develops additional language skills from their initial language practices in their home language. Therefore, for a student, learning a new language depends upon the skills developed in the home language because it is easier to understand if the	Connectivity between languages is an important phenomenon. Languages are not separated from one another. A shared pool of resources is created when all language skills, abilities, and practices are interconnected, which helps students	To enhance specific cultural and identity purposes, adaptation if adaptive bilingual and multilingual speakers adopt the communication. For example, a principal in a Pakistani Government School in a countryside location, which has	Students in multilingual classrooms utilize their full linguistic repertoires to construct meaning. For instance, a student from an English Medium school in Pakistan who speaks Urdu and English might code-switch between the two languages to better

student's language is more developed.	co-construct and negotiate meaning.	mostly Urdu medium schools, might give a speech at an annual prize distribution ceremony in Urdu and Punjabi (a regional dialect of most of the residents) but write a report on the event in Urdu and English for school records.	understand and explain a math concept. During a math lesson, this student could clarify the steps of long division for a peer who is not fluent in English and needs help by describing them in Urdu and then reiterating the process in English. That is how Language practices are used to create meaning in complex ways. (Most of the text in this column is generated by the prompt shared with Claude AI in this column).

Adapted from Institute of Education Sciences (n.d.)

Challenges and Considerations for Translanguaging

The challenges associated with translanguaging included lack of acceptance, need for paradigm shift, and few assessment methods. Although there is a lack of acceptance for translanguaging, there have been small strides made in relation to teaching and research. Assessment ideas are still minimal but also require great attention to an instructional context.

Teaching/Research Shift

There are some shifts demonstrating a change in teaching/research to develop metalinguistic awareness to trigger the background knowledge and to recognize the cultivation of ideas to reinforce deeper understanding through meaning-making practices with both language and content objectives. According to Cenoz and Gorter the most potent form of pedagogical translanguaging includes those practices that "aim to develop metalinguistic awareness by activating prior knowledge and identifying connected growers

so that students can make more progress in the development of their multilingual skill" (as cited in Citation2021, 31). Similarly, Rachel Bloom-Pojar (2018) talks about translingual variations in her book *Translanguaging outside the Academy: Negotiating Rhetoric and Healthcare in the Spanish Caribbean*. Her study discusses fields of writing and rhetoric were being inundated with discussions of language, diversity, variance, and the translingual and were in constant revision. She gave special emphasis to the words and experiences of her participants. She wanted to privilege and forefront their descriptions used in her research study of how they language even if they did not call it "languaging". Ofelia Garcia and Li Wei's definition of "languaging is a simultaneous process of continuous becoming of ourselves and our language practices, as we interact and make meaning in the world" (10-11).

Assessment Methods

Traditional assessment methods often fail to accurately evaluate multilingual learners as they cannot demonstrate knowledge in a single language. Translanguaging provides an authentic alternative that allows students to leverage their full linguistic repertoires during assessment. Potential techniques include allowing students to respond to test questions by writing or speaking in their dominant language and translating responses to the target language. Students could also be encouraged to think aloud in multiple languages when problem-solving during assessments. Portfolio evaluations that include writing samples or recordings in multiple languages can provide more comprehensive students' abilities to evaluate home languages and promote meaning-making. Students' translanguaging practices are used in assessment to assess students' proper competencies while honoring their unique identities and ways of knowing. As cla'srooms grow increasingly diverse and culturally responsive, flexible assessment through translanguaging is essential for equity.

Lack of Acceptance

Translanguaging is considered as dual or two-way methodological approach. On one hand, scaffolding methods as a pedagogy for Translanguaging enables children to see and use all of their languages for learning and it can be used a s the ability of multilinguals to switch quickly and with ease between languages irrespective of socially and politically defined boundaries on the other. (García & Kleyn, 2016; García & Wei, 2014; Lewis, Jones, & Baker, 2012a; but see: MacSwan, 2017). In a short span of time, translanguaging has gained acceptance as a recent and significantly effective concept in the areas of bilingual and multilingual education as noted by Cenoz and Gorter (2017, p. 910). Nevertheless, it is

difficult to achieve meaningful translanguaging practices in the classroom (García & Kleyn, 2016; Hornberger & Link, 2012) and there are risks which are labelled as simplistic or romanticized (Canagarajah, 2011a; García & Kleyn, 2016).

Canagarajah (2011) further elaborates this viewpoint that translanguaging as a social accomplishment is overlooked in most cases. As a matter of fact, through translanguaging, a person draws from all the languages in their repertoire to communicate and switch to co-construct meaning. In fact, it is an innovative improvisation based on the context and local situation. Additionally, Cangarajah (2011) states that in general, the pedagogical side of translanguaging is underdeveloped. Furthermore, Lewis, Jones, and Baker (2012b) verify that there is a dire need to establish intense research to establish systematically and purposefully translanguaging the multilingual contexts of addressing when, where and how as an appropriate pedagogical approach (Probyn, 2015).

Supporting Translanguaging from K-12 through Higher Education

While translanguaging often occurs naturally for multilingual students, research indicates it should also be taught explicitly. Simply allowing it to happen spontaneously can give the false impression that instruction in translanguaging is unnecessary. This view romanticizes students' translanguaging practices without identifying limitations or errors that could be improved through teaching excerpts from students' native languages (Canagarajah, 2011).

Strategies for explicit translanguaging instruction are outlined in the CUNY-NYSIEB guide (2011). To start, teachers can empower students to use their full linguistic repertoires through small steps like making diverse languages visible in the classroom or learning greetings i.e., to say 'hello' in different languages (García & Wei, 2014). More meaningful activities include having students' complete assignments using all their language resources (Kiramba, 2017) and collaborating in "language pairs" where they choose which language(s) to use.

Pairing students with different levels of proficiency in the school's language allows more capable peers to scaffold instruction (García & Wei, 2014; Rosiers, Willaert, Van Avermaet, & Slembrouck, 2016). When pairing language is impossible, comparing languages can build vocabulary, morphology, and reading comprehension (Kieffer and Lesaux, 2007; Laufer & Girsai, 2008; Nagy, Berninger, and Abbott, 2006). Students can translate specific

texts or vocabulary and then paraphrase in other languages. Actively contrasting languages develop metalinguistic awareness (e.g., Lyster, Quiroga, and Ballinger, 2013; Ticheloven, Schwenke Lam, and Fürstenau, forthcoming, 2020)., which improves foreign language learning (Rauch, Naumann, & Jude, 2012). With explicit teaching, translanguaging can be an effective instructional technique.

Conclusion

Overall, Translanguaging is a translinguistic (multilingual) phenomenon, which reinforces students' native language abilities to be used simultaneously with the target language throughout the learning process. Students feel motivation and empowerment and by incorporation of their native language components in the content under consideration which also meets their social and emotional needs. The diverse students including English language learners and students with disabilities feel confident, welcomed and validated in their classes based on their identities in relevance to their native languages.

Translanguaging not only improves cognitive development, comprehension and cultural inclusivity within the learning environment, but also enhances conducive learning in an explicit learning environment through flexible multilingual instruction and collaboration. A detailed list of strategies can be used by higher education institutions to support translanguaging through student collaboration, faculty development, policies and structural resources allocation are outlined in CUNY-NYSIEB guide and guides for educators.

In Translanguaging, the focus needs to revolve around the development of assessments in project-based and scenario-based environments and overcome theoretical shifts and linguistic prejudices. Therefore, it will be inspiring if these multilingual practices are reinforced among the multilingual audience of learners by applying their linguistic repertoires and scaffolded learning. It is crucial to offer support and resources to employ complete linguistic range and enhance communicative competence based on a generalized understanding of translanguaging strategies which are practiced in a limited way.

Concludingly, in this era of increased migration and globalization, as the education system encounters new tasks, empowering and motivational possibilities are needed in this time based on Translanguaging pedagogy. Yet, there have been unanswered questions in the ongoing research in multilingualism founded on the ideas of languages as separate entities tied to specific geopolitical spaces and cultures. There is a requirement of a pedagogy which

can create an educational experience and help enhance a conducive learning environment to be "focused on fluid relationships between different ways of meaning- making" (Kramsch and Huffmaster, 2015), by our post-modern global communication era.

Questions:

1. In your own words, define translanguaging.
2. What are some of the benefits of multilingualism and how are they complementary?
3. How does translanguaging improve the environment of the classroom?
4. What are some of the challenges translanguaging must overcome and how could you counter one of the challenges if you were faced with it?

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Appendix: *Multilingualism and Translanguaging*

Activities & Discussion Ideas

Introducing translanguaging practices in any learning environment aims to immerse learners in the content through interactive, multilingual activities that validate their cultural identities and give hands-on practice with translanguaging techniques. Below are some activities to engage learners with the key ideas from the text:

- **Vocabulary Translation Activity:** Have students work in pairs or small groups to identify key vocabulary words from the text, write them on index cards in English, and then translate them into their home languages on the back of the cards. Students can use these cards to study the terms and discuss meanings.
- **Multilingual Artifact Share:** Ask students to bring in an artifact (photo, object, song clip, etc.) from their family/culture that relates to their home language. Have them present briefly to the class in the language of their choice. This celebrates linguistic diversity.
- **Translanguaging Discussion:** Divide into home language groups and have students discuss a prompt related to the text using translanguaging techniques. One student then summarizes the discussion for the whole class in English.
- **Think-Pair-Share Reflections:** Have students reflect individually on a discussion question about translanguaging, share ideas with a partner in their preferred language, and then summarize the partner's viewpoint to the class in English.
- **Translanguaging Stations:** Set up stations for reading, writing, listening, and speaking activities focused on the text content. Students rotate through and can utilize their full linguistic repertoire at each station.
- **Multilingual Media Creation:** Have students create a multilingual glossary, newsletter, video, or podcast that summarizes and explains key translanguaging concepts from the text.
- **Explicit Translanguaging Instruction Simulation:** Roleplay classroom scenarios modeling precise translanguaging teaching strategies from the text, like contrastive language analysis or scaffolded peer support.

Relevant Videos

Benefits of a Bilingual Brain: https://www.youtube.com/watch?v=MMmOLN5zBLY

What Happens to Your Brain When You Learn a New Language: https://www.youtube.com/watch?v=7XKmqy8vFwk

How Does Language Change Your Brain? https://www.youtube.com/watch?v=aGITqiG-Ips

Is Bilingualism a Superpower? https://www.youtube.com/watch?v=EGGFsOPQaAU

Cognitive Advantages of Bilingualism: https://www.youtube.com/watch?v=W-ml2dD4SIk

Speaking Multiple Languages: The Benefits of a Bilingual Brain: https://www.youtube.com/watch?v=Wy2Dq_m67Lc

What is Multilingualism? https://www.youtube.com/watch?v=cjGipmQVo-g

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Saadia Ali, a Doctoral Candidate in Instructional Design and Technology in the department of Curriculum and Instruction at Virginia Tech. She focuses on Open Education Resources, Translanguaging, Accessibility and Motivation. She holds a Master of Arts degree in English Linguistics and Literature from National University of Modern Languages (NUML), Islamabad, Pakistan and a Master of Science in Bilingual, Multicultural Education and TESOL (Teachers of English to the Speakers of Other Languages) from Southern Connecticut State University, New Haven, CT. With over 16 years of teaching undergraduate and graduate students and research experience in Higher Education, she has a passion for multilingualism, diversity, equity, inclusion, and community engagement. She is an Adjunct faculty member at the University of Northern Colorado and working as a Graduate Assistant in the Office of Global Outreach & Online Engagement in Global Engineering, Engagement & Research (GEER) department in the College of Engineering (COE) at Virginia Tech. Being a native speaker of Urdu and fluent in English, Punjabi and Hindi languages, she is a also serving as translator and interpreter for the Montgomery County Public Schools in the New River Valley (NRV) area.

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