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Language and Literacy Strategies for Indigenous Children: A Scoping Review

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ABSTRACT

The purpose of this scoping review was to describe the existent research on language and literacy strategies for Indigenous children and to establish the strength of strategies described. A scoping review was conducted to locate existent studies that described language and literacy interventions used with Indigenous children. The following electronic databases were searched: PsycINFO, ERIC, CINAHL Complete, Academic Search Premier, Education Source, and ASHAWire. Articles were managed and analyzed using Covidence, a web-based program for review research. Results were charted and a preliminary evidence map was created. Forty sources were identified that described language and literacy strategies for Indigenous children. Strength of strategy coding revealed 5 sources had compelling strength, 5 had promising strength, and 30 had lacking strength. Overall, there remains limited research describing language and literacy strategies for Indigenous children. A preliminary evidence map was created to chart each strategy and sources that included the strategy, and to indicate the highest strategy strength observed across sources. A discussion of compelling strategies as well as strategies that may be culturally responsive is provided.

KEYWORDS: Indigenous, language, literary

Learning Outcomes: As a result of this activity, the reader will be able to (1) describe educational disparities and the abundance model in relation to Indigenous children; (2) summarize the available research describing

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language and literacy strategies for Indigenous children; (3) analyze an evidence map of strategies; and (4) identify compelling strategies and/or those that are promising that need to be evaluated for effectiveness and cultural appropriateness.

INDIGENOUS POPULATIONS

The terms *Indigenous* and *Native American* are terms used to describe tribal communities in the United States, First Nations in Canada, and other Indigenous communities in Central America as defined by the National Congress of American Indians.[1] However, the U.S. government often reports population data using the terms American Indian or Alaskan Native. For example, the National Center on Educational Statistics defines *American Indian or Alaska Native* as a person having origins in any of the original peoples of North and South America (including Central America) and maintaining tribal affiliation or community attachment.[2] For consistency, the term *Indigenous* will be used throughout this article.

The overall population of Indigenous people is increasing; there are approximately 574 federally recognized tribes in the United States.[1] In 2020, Indigenous people accounted for 1.1% (3.7 million) of all people living in the United States, compared with 0.9% (2.9 million) in 2010. Together, individuals who identified as Indigenous or Indigenous in combination with another race comprised 9.7 million people (2.9% of the total population) in 2020, up from 5.2 million (1.7%) in 2010. Several states including Alaska, South Dakota, New Mexico, and Oklahoma have more than 10% of the state population consisting of individuals who identify as Indigenous.

NEED FOR LANGUAGE AND LITERACY RESEARCH WITH INDIGENOUS CHILDREN

Indigenous children experience profound educational disparities including decreased access to educational opportunity, lower graduation rates, higher rates of suspension/expulsion, and the highest drop-out rate compared with other races and ethnicities.[2] In addition, the most recent data reporting the representation of Indigenous children in special education has shown disproportionate representation across disability categories. Nationwide, Indigenous students continue to be the racial/ethnic group with the highest percentage of students served in special education, with 18% enrolled in special education.[3] Of Indigenous children in special education, 38% were identified with specific learning disabilities, 16% with speech-language impairment, and 12% had other health impairment.[2] Furthermore, a higher percentage of Indigenous students (10%) received services for developmental delay, compared with 6% of all students. Indigenous students were less likely to receive services for autism (6%) and were underrepresented as gifted and talented.

Researchers have attributed these educational disparities to the *systematic failure* of school systems to tap into the strengths of Indigenous children and communities.[4,5] The authors of this scoping review have proposed that a culturally responsive way to address the language and literacy needs of Indigenous children is to shift from a *deficit model* to an *abundance model*.[6] A deficit model focuses on child weaknesses; what a child cannot do; and attributes poor performance to personal, family, and/or cultural characteristics. An *abundance model* has a relational and intergenerational focus that emphasizes support, empowerment, and opportunities with the aim of developing a child's cultural assets.[6,7] An *abundance model* focuses on the child's positive development, identifying and building up student and family assets, and the discussion is centered on the child's interest, strengths, skills, talents, and competencies. The abundance model can lead to greater understanding when working with Indigenous families and students.

Adequately meeting the developmental and educational needs of Indigenous children requires that researchers and educational teams learn about existent language and literacy strategies that have been used to address the learning needs of this population. In the spirit of an abundance model and identifying existing strengths, a scoping review of the existent research literature will provide a summary of what is understood about language and literacy interventions with

Indigenous children. It essentially will inform *what works* and *what can be improved*.

PURPOSE AND APPROACH

The current study will summarize what is known about language and literacy strategies for Indigenous children. The purpose of this study is to (1) identify and describe the existent research on language and literacy strategies with Indigenous children; (2) classify the strength of strategies from this literature.

The authors applied a *scoping review* methodology to search, review, and classify the strength of language and literacy strategies for Indigenous children. The goals of a scoping review include examining the depth and quality of research on a given topic; summarizing and mapping research findings for practitioners or consumers; and identifying gaps in the research to establish areas for future research. Scoping reviews employ an iterative and flexible process in which potential sources are collected, examined for their relevance to the research question, and mapped according to how they relate to the key concepts underpinning the research question. There are five stages to a scoping review[8]:

1. Identifying the research question.
2. Identifying relevant studies.
3. Selecting studies.
4. Charting the data.
5. Collating, summarizing, and reporting the results.

METHODS

Search Strategy

The authors followed the *Preferred Reporting Items for Systematic Reviews and Meta-Analyses-Scoping Review (PRISMA-ScR)* guidelines for this study.[9] The PRISMA-ScR protocol provides authors with guidelines for documenting and reporting scoping review details including 22 reporting points from abstract to conclusions. The PRISMA-ScR protocol completed for this scoping review is available as a supplementary appendix (Supplementary Material). This protocol was used to guide decision making and documentation. *Covidence* review software was used to manage the charting of the data.[10] Covidence is a web-based software platform that facilitates importing sources from databases, citation screening, full-text review, data selection, data charting, and data extraction.

Procedure

STAGE 1: IDENTIFYING THE RESEARCH QUESTION: OBJECTIVES OF THE SCOPING REVIEW

This scoping review examined research with Indigenous children birth to 18 years of age to answer the following two questions.

1. What language and literacy strategies are described in the research literature?
2. What is the strength of strategies identified?

STAGE 2: IDENTIFYING RELEVANT STUDIES

The authors developed the search terms based on the research questions and their experience and knowledge of Indigenous populations and language and literacy. Table 1 provides the search terms across four columns. All combinations of terms were searched in each database, but combinations of search terms within term groups were not used. Instead, each search string consisted of one term from each term group joined by "AND." The research team conducted a

Table 1 Scoping Review Search Terms

Indigenous	Delay	Vocabulary	Strateg
Native American	Disorder	Language	Therapy
American Indian	Disability	Syntax	Intervention
First nations	Impairment	Grammar	Approach
Alaskan Natives	At risk	Literacy	Education
		Read	Teach

Each search string consisted of one term from each term group joined by "AND."

search of EBSCO electronic databases including PsycINFO, ERIC, CINAHL Complete, Academic Search Premier, and Education Source (completed October 2021). To check reliability of database searches, approximately 10% of the search terms combination database queries were replicated, where a member of the research term repeated a search term combination in a database to check to see if the same sources appeared as were obtained in the initial search. A 100% reliability rate was obtained for these reliability checks. Next, the ASHAWire search engine was used to locate additional sources. ASHAWire is a search tool that provides a fully interconnected network of publications from the American Speech-Language-Hearing Association (completed October 2021). Finally, in line with typical scoping review procedures, a hand search of promising sources, including reference lists and known sources, was completed (completed November 2021).

STAGE 3: SELECTING STUDIES

The selection of studies involved two steps: initial title and abstract screening and full-text review. Initial title and abstract screening was conducted to establish if sources were relevant based on the inclusion criteria below.

1. The study or intended population must be Native American or Indigenous as defined by the National Congress of American Indians.[1]

2. Participants must be children or teachers/caregivers (agents) who deliver the intervention to children.

3. The intervention program must be intended for language and/or literacy.

Title and abstract screening. Each study identified underwent initial title and abstract screening by the first or second author and a graduate student who had been trained in the screening criteria. After initial training and review of terms and software features, the first 10 articles were screened by two coders to establish screening consistency. Each study was screened to ensure it met the inclusionary criteria. Then, coders completed title and abstract screening using Covidence software, with two coders (one of the authors and a graduate student in speech-language pathology) coding each of the sources. Agreements and disagreements across coders were tracked by Covidence. Agreements immediately were advanced to full-text review or were removed based on screening decisions. Disagreements were flagged by Covidence for resolution coding, in which the coder who had not previously been involved in screening of the source screened the article and discussed the final decision with the team during weekly meetings.

Full-text review. Sources that had been advanced to full-text review were reviewed by at least one of the authors and a graduate student. Each study was again reviewed to ensure the study met the inclusionary criteria. The criteria were reviewed during a team meeting and Covidence features and procedures were reviewed prior to beginning full-text reviews. Covidence features included recording the reason an article was excluded during this stage and having coders take relevant notes within Covidence so that further discussion could occur. All the full-text sources were coded with agreement.

STAGE 4: CHARTING THE DATA

Charting the data was a two-step process: data extraction and charting the data. A data extraction form was set up within Covidence. The form included the following: stage source, source type, grade-level, if the source included children with disabilities, country, and caste information. In addition, a *Strength of Strategy Coding* form was set up in Covidence. This coding system was used in several earlier scoping reviews.[11,12] Table 2 presents the strength of coding categories and indicators. To be assigned, a source had to have all of the qualities described for a given strength level. The first 10 sources were extracted collaboratively by the authors to establish and verify consistent use of the data charting forms within Covidence. Point-by-point agreement was 0.96 for the data extraction and 100% agreement for the strength of strategy coding. The authors then independently extracted data for the remaining 30 studies. After all the data were charted, the authors met to achieve consensus on data extraction on all 40 articles. Any discrepancies were resolved through a consensus coding discussion.

STAGE 5: COLLATING, SUMMARIZING, AND REPORTING RESULTS

The authors applied a thematic framework to identify broad domains and subdomains. This

Table 2 Strength of Strategy Coding

Recommendation strength	Study quality indicators
Compelling	☐ Study described the intervention strategy and randomized assignment to treatment condition
	☐ Study included pre-test post-test measures that were relevant to the intervention strategy
	☐ Study reported statistical analysis and results (including significance and/or effect size or data that can be used to calculate these)
	☐ Study reported positive intervention outcomes
Promising	☐ Study did not describe the intervention strategy implementation adequately or did not randomly assign participants to treatment
	☐ Study reported suggestive findings, but did not include pre-test and post-test measures, or measures were not relevant to the intervention strategy
	☐ Study did not report enough detail about statistical analysis and results (e.g., significance or effect size) to be compelling; significance was reported but effect size was small
	☐ Study reported neutral intervention outcomes or outcomes that did not differ from no treatment or control groups
Lacking	☐ Study lacked methodological rigor or lacked descriptions of participant selection, intervention strategy, procedures, or was not designed to evaluate an intervention strategy (this includes descriptive studies, recommended practices, and/or tutorial type articles)
	☐ Study may have reported descriptive, comparative, or correlation results, but did not include pre-test post-test measure
	☐ Study may report data, but does not isolate intervention strategy, or does not report statistical analysis, and/or lacks rigor or practical significance
	☐ Study does not report intervention outcomes

involved sorting individual strategies into the domains of language or literacy, and then collating the strategies further into subdomain areas under these broad domains. Each strategy that was described in the sources underwent this process. In some instances, slight variations of strategies were described or researches used a variation of the name of the strategy (e.g., enhanced vocabulary instruction, enrich vocabulary, deliberate vocabulary teaching, teaching key vocabulary words). In such instances, the authors grouped all similar strategies together, identified common aspects that described the strategies, and refined the strategy description until an inclusive and accurate term was identified (e.g., targeted vocabulary instruction). This occurred without changing the intended meaning or the accuracy of the original source. If a strategy did not fit the inclusive term, it was pulled out and left as a standalone strategy.

Once all of the strategies were collated and sorted in broad domains and subdomains, the results were organized into a preliminary *evidence map*, a table which presents and organizes pertinent information about strategies identified through the scoping review. The evidence map included *highest strength* observed for a strategy, which was coded by identifying and indicating the highest strength observed across resources that applied a given strategy. The evidence map also included grade levels and the sources that described the strategy.

RESULTS

The research questions identified in Stage 1 were as follows: (1) *What language and literacy strategies are described in the research literature* and (2) *What is the strength of strategies identified?* Stages 2 and 3 involved identifying, selecting, screening, and reviewing sources. Fig. 1

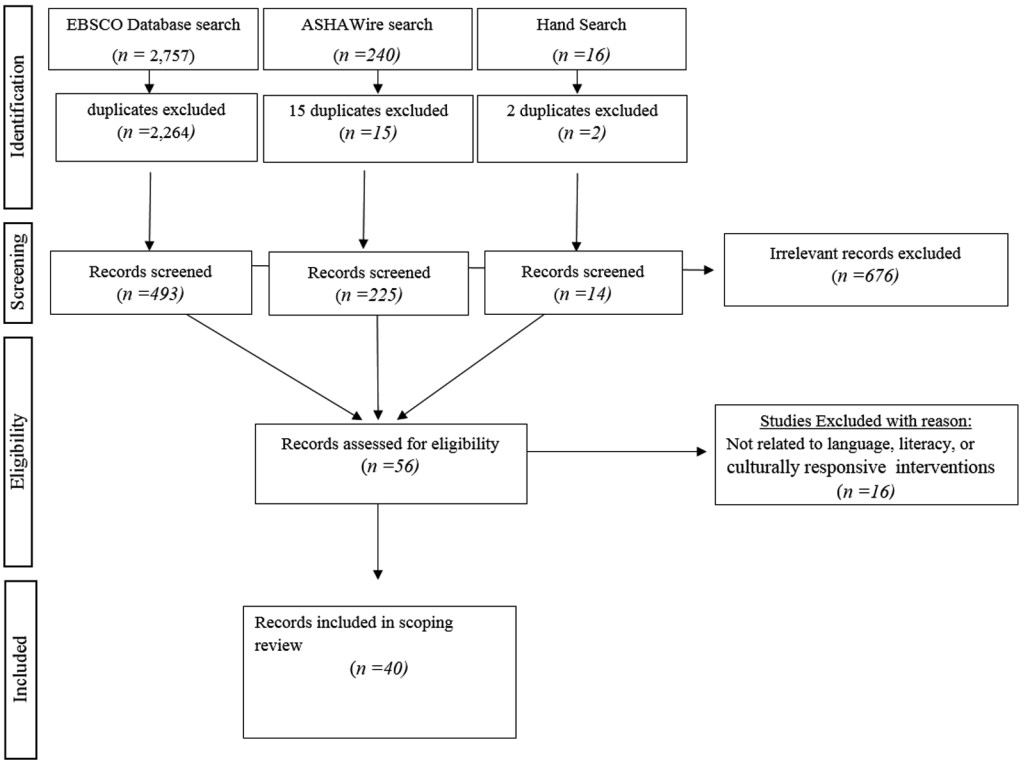

Figure 1 Scoping review search, process, and flow diagram.

presents the scoping review search, process, and flow diagram in line with PRISMA-ScR guidelines.[9] The combined searches identified 3,013 sources; 2,757 were from EBSCO databases, 240 from ASHAWire, and 16 from the hand search. After duplicates were removed, the remaining 732 studies underwent title and abstract screening. Of these, 676 sources were excluded for not meeting one or more of the eligibility criteria. This was followed by full-text review of the remaining 56 sources; 16 of these were excluded upon further review for not meeting inclusion criteria. A total of 40 sources were selected for inclusion in the present scoping review.[4,5,13–49] Of these, 24 were identified from the EBSCO database search, 8 were from ASHAWire, and 8 were from the hand search.

Aligned with Stage 4, the details for the 40 sources were charted; this information is available in Table 3. Sources included 11 clinical tutorials/recommended practice documents, 9 program or approach description, 5 nonrandomized treatment studies, 3 department of education or Indian education documents, 3 conference proceedings, 2 cross-sectional descriptive studies, 2 dissertations, 1 descriptive mixed method study, 1 cohort treatment study, 1 nonsystematic review, 1 manual or guidelines from a state, and 1 book chapter. In terms of ages or child populations described, 13 sources described strategies with preschool age children (intended for children younger than 5 years), 26 described school-age children (inclusive of kindergarten-age to 18 years of age), and 1 described both preschool and school-age children. Only 6 of the 40 sources mentioned or specifically described the intervention in relation to children with disabilities. Twenty-eight of the sources were from the United States, and 12 were from Canada. Seventeen of the sources did not specify tribes that the language and literacy strategies were intended for, 23 sources identified specific tribes—and a total of 21 tribes were mentioned. Finally, strength of strategy coding revealed 5 sources with compelling strength, 5 with promising strength, and 30 with lacking strength.

After initial charting of the 40 sources, further collating and summarizing was

Table 3 Charting of Sources and their Details

Stage	Reference	Source type	Grade level	Included disability	Country	Tribal information	Strength of strategy coding
EBSCO Databases (n = 24)	Ashmore et al[13]	Manual or guidelines from a state agency	Preschool	Yes	The United States	Confederated Salish and Kootenai tribes	Lacking
	Ball[15]	Clinical tutorial/recommended practices	Preschool	No	Canada	Not specified	Lacking
	Battisti et al[16]	Nonrandomized treatment study	School-age	No	Canada	Not specified	Promising
	Hopkins and Bean[33]	Clinical tutorial/recommended practices	School-age	No	United States	Cheyenne	Lacking
	Johnson and Ramirez[23]	Conference proceedings	School-age	Yes	United States	Not specified	Lacking
	Johnson[24]	Department of Education or Office of Indian Education document/report	School-age	Yes	United States	Not specified	Lacking
	Kay-Raining Bird[17]	Program or approach description	School-age	No	Canada	First Nations, Inuit, and Métis	Lacking
	MacKay and Mcintosh[28]	Nonrandomized treatment study	School-age	No	Canada	Not specified	Compelling
	Mattatall[29]	Dissertation	School-age	No	Canada	Not specified	Compelling
	McCarty et al[30]	Program or approach description	School-age	No	The United States	Not specified	Lacking
	McIntosh et al[32]	Nonrandomized (treatment study)	School-age	No	Canada	Sto:lo and Metis nations	Compelling
	Morcom and Roy[34]	Cohort study (treatment study)	Preschool	No	Canada	Ojibwe	Promising
	Shores[47]	Conference Proceeding	Preschool	No	The United States	Not specified	Lacking
	National Advisory Council on Indian Education 1990[35]	Conference proceedings	Preschool School-Age	No	The United States	Not specified	Lacking
	Peltier[39]	Clinical tutorial/recommended practices	School-age	Yes	Canada	Not specified	Lacking
	Peltier[40]	Clinical tutorial/recommended practices	School-age	No	Canada	Ojibwe-speaking Anishinaabe people	Lacking
	Peltier[41]	Program or approach description	School-age	No	Canada	Not specified	Lacking
	Ramey and Sileo[42]	Program or approach description	School-age	Yes	United States	Navajo	Lacking
	Reyhner[43]	Clinical tutorial/recommended practices	School-age	No	United States	Not specified	Lacking
	Reyhner[44]	Clinical tutorial/recommended practices	Preschool	No	United States	Hawaiian and Maori	Lacking
	Romero-Little[25]	Book chapter	School-age	No	United States	Tsehootsooi Dine Bi olta, Kanaka Maoli	Lacking
	Smith and Peck[48]	Program or approach description	School-age	No	Canada	Mi'kmaw	Lacking
	St. Charles and Costantino[49]	Department of Education or Office of Indian Education document	School-age	No	The United States	Not specified	Lacking
	U.S. Department of Education[38]	Department of Education or Office of Indian Education document	School-age	No	The United States	Not specified	Lacking
ASHAWire (n = 8	Faircloth and Pfeffer[18]	Program or approach description	Preschool	No	The United States	Seneca Nation	Lacking
	Gillispie[4]	Clinical tutorial/recommended practices	Preschool	No	The United States	Not specified	Lacking
	Inglebret et al[58]	Clinical tutorial/recommended practices	Preschool	No	The United States	Southern Puget Salish	Lacking
	Inglebret et al[22]	Clinical tutorial/recommended practices	School-age	Yes	The United States	Northwest tribes	Lacking
	Loeb et al[26]	Program or approach description	School-Age	No	The United States	Not specified	Lacking
	Nelson-Strouts and Gillispie[37]	Cross-sectional study	Preschool	No	The United States	Prairie Band Potawatomi Nation	Lacking
	Robinson-Zañartu[45]	Clinical tutorial/recommended practices	School-age	No	The United States	Not specified	Lacking
	Ross[46]	Program or approach description	Preschool	No	The United States	Chinuk Wawa	Lacking
Hand search (n = 8)	August et al[14]	Other: nonsystematic review	School-age	No	The United States	Navajo, Choctaw	Promising
	Fayden[19]	Nonrandomized treatment study	School-age	No	The United States	Not Specified	Compelling

Table 3 (*Continued*)

Stage	Reference	Source type	Grade level	Included disability	Country	Tribal information	Strength of strategy coding
	Ferris et al[21]	Mixed methods design (qualitative + quantitative)	Preschool	No	The United States	Northern Arapaho, Eastern Shoshone, Oglala Lakota, Osage, and Standing Rock Sioux	Promising
	Ferris[20]	Dissertation	Preschool	No	The United States	Northern Arapaho, Eastern Shoshone, Oglala Lakota, Osage, and Standing Rock Sioux	Lacking
	Gillispie[5]	Clinical tutorial/recommended practices	Preschool	No	The United States	Prairie Band Potawatomi	Lacking
	Kay-Raining Bird[17]	Program or approach description	School-age	No	Canada	First Nations, Inuit, and Métis	Lacking
	Loeb et al[26]	Nonrandomized treatment study	School-age	No	The United States	Cherokee, Kickapoo, Lakota, Prairie Band Pottawatomie, Sac-n-Fox, and Sioux	Compelling
	McConnell and Loeb[31]	Cross-sectional study	School-age	No	The United States	Kickapoo Nation, Prairie Band Potawatomie, Cherokee, Lakota, Sac and Fox, and Sioux	Promising

conducted as part of Stage 5. It should be noted that multiple strategies could have been extracted from a single source (e.g., the Romero-Little [2010] source described five different strategies). The domain of language had 43 strategies or approaches that were collated into five subdomains, including bidialectal education (n= 10), language stimulation strategies (n= 13), narrative-based strategies (n= 10), enhanced language instruction (n= 5), and other language approaches (n= 5). The domain of literacy had 49 strategies or approaches that were collated into nine subdomains, including shared book interactions (n= 6), print knowledge (n= 3), phonological awareness (n= 1), phonics (n= 2), fluency (n= 4), reading comprehension (n= 14), multi-literacy (n= 3), dialect bi-literate (n= 2), written language instruction (n= 6), and other approaches (n= 8).

Table 4 provides a preliminary evidence map of strategies obtained in this scoping review. The evidence map is organized by broad domains and subdomains. For each strategy, detailed information is provided, including highest strength of strategy, the grade level for which the strategy is intended, and citations for sources that described the strategy. Of the 43 language strategies identified, 18 were lacking strength, 12 had promising strength, and 13 had compelling strength. Of the 49 literacy strategies identified, 27 were lacking strength, 7 had promising strength, and 15 had compelling strength.

DISCUSSION

This scoping review is the first to review sources that have described language and literacy strategies intended for Indigenous children. Forty sources were identified that met criteria, and of these the majority were non-database sources describing clinical tutorials/recommended practices, program or approach description, and conference proceedings. However, several sources were database, including some that were nonrandomized treatment studies. Very few sources, and none of the treatment studies, included children with disabilities. Overall, there continues to be a scarcity of treatment-based research on language and literacy for

Table 4 Preliminary Evidence Map of Strategies

Type of strategy	Specific strategy	Highest strength of strategy observed	Grade level	Source(s)
Language strategies				
Bidialectal education				
	Value, respect, and pride for dialect diversity	Lacking	School-age	Peltier 2010; Peltier 2011; Kay-Raining Bird 2011
	Identify dialects used in scenarios/contexts	Promising	School-age	Battisti et al 2011
	Develop dialect awareness with educators/students	Promising	School-age	Peltier 2010; Battisti et al 2011; Ramey and Sileo 1975
	Curricular materials that reflect both dialects	Lacking	School-age	Peltier 2011
	Teach pronunciation, spelling, grammar, discourse, narrative styles, and writing conventions of dialects	Promising	Preschool and school-age	Peltier 2010; Robinson-Zañartu 1996; Inglebret et al 2008; Battisti et al 2011; Johnson and Ramirez 1990; Peltier 2011
	Use contrastive analysis to discuss dialect features	Promising	School-age	Battisti et al 2011; Peltier 2011
	Teach code-switching across dialects	Promising	School-age	Battisti et al 2011; Peltier 2011; St. Charles and Costantino 2000
	Provide opportunities to use both dialects	Lacking	School-age	Peltier 2010; Peltier 2011
	Involve family and community members (speakers of indigenous dialect) in related dialect activities	Lacking	School-age	Peltier 2017
	English as a second dialect services	Promising	School-age	Battisti et al 2011; Johnson and Ramirez 1990
Language stimulation strategies				
	Embed language strategies into daily routines	Lacking	Preschool and School-age	Ferris 2020; Ashmore et al 2003
	Expand child's utterance	Lacking	Preschool	Ferris 2020
	Model language	Compelling	School-age	McIntosh et al 2011
	Use wait time	Lacking	School-age	St. Charles and Costantino 2000
	Use demonstration, realia, and models while teaching	Compelling	Preschool and school-age	Faircloth and Pfeffer 2008; Loeb et al 2011
	Ask child basic or open-ended questions	Promising	Preschool and school-age	August et al 2006; Ferris 2020; Gillispie 2021; Inglebret et al 2008
	Ask child inference question	Promising	School-age	August et al 2006
	Use of cloze technique	Lacking	Preschool	Inglebret et al 2008
	Use of comprehension checks education	Lacking	School-age	St. Charles and Costantino 2000
	Ask child to follow instructions	Lacking	Preschool and school-age	Ramey and Sileo 1975; Ashmore et al 2003
	Encourage child asking questions	Compelling	Preschool and school-age	Fayden 1997; Nelson-Strouts and Gillispie 2017
	Encourage child making comments	Compelling	Preschool and school-age	Fayden 1997; Nelson-Strouts and Gillispie 2017; St. Charles and Costantino 2000
	Elicit descriptive language from children	Lacking	Preschool	Inglebret et al 2008
Narrative-based strategies				
	Teach listener–storyteller interactions and dialogue (comprehension and expression)	Promising	Preschool and school-age	Peltier 2017; McConnell and Loeb 2021; Inglebret et al 2008
	Provide multiple opportunities for storytelling	Compelling	Preschool and school-age	MacKay et al 2012; Faircloth and Pfeffer 2008; Nelson-Strouts and Gillispie 2017
	Teach story grammar	Compelling	Preschool and school-age	Fayden 1997; Gillispie 2021
	Storytelling focus sequencing and describing	Lacking	Preschool	Nelson-Strouts and Gillispie 2017; Ashmore et al 2003
	Make inferences and predictions during experiences with stories	Compelling	Preschool and school-age	Inglebret et al 2008; Ashmore et al 2003 Romero-Little 2010; Fayden 1997
	Provide opportunities for story retell	Lacking	Preschool	Gillispie 2021; Ashmore et al 2003
	Discuss feelings in narratives and role play	Compelling	School-age	MacKay et al 2012
	Sing songs/stories	Compelling	School-age	McIntosh et al 2011
	Teach children how to code-switch roles in storytelling in different contexts	Promising	School-age	McConnell and Loeb 2021

Table 4 (*Continued*)

Type of strategy	Specific strategy	Highest strength of strategy observed	Grade level	Source(s)
	Integrate tribe's heritage and traditions into all aspects of storytelling	Lacking	Preschool	McConnell and Loeb 2021; National Center for Rural Early Childhood Learning Initiatives 2006
Enhanced language instruction				
	Teach pre-academic concepts	Compelling	Preschool and school-age	Ferris 2020; McIntosh et al 2011; Ashmore et al 2003
	Targeted vocabulary instruction	Compelling	Preschool and school-age	Morcom et al 2017; MacKay et al 2012; Fayden 1997; Gillispie 2021; Inglebret et al 2008; St. Charles and Costantino 2000; National Center for Rural Early Childhood Learning Initiatives 2006; Ashmore et al 2003; Loeb et al 2011
	Targeted morphology or grammar instruction	Compelling	Preschool and school-age	Morcom et al 2017; MacKay et al 2012; Gillispie 2021; Gillispie 2016; Ashmore et al 2003; Johnson 1991; Hopkins et al 1998
	Teach social language	Compelling	Preschool and school-age	MacKay et al 2012; Faircloth and Pfeffer 2008; Ashmore et al 2003
	Teach metalinguistic skills (talk about talking and thinking)	Lacking	Preschool and school-age	Inglebret et al 2011; Robinson-Zañartu 1996; Inglebret et al 2008; Johnson 1991; Romero-Little 2010
Other language approaches				
	Encourage exposure and use of Indigenous language	Promising	Preschool and school-age	Ball 2012; McCarty et al 1997; Kay-Raining Bird, 201; Morcom et al 2017; Ross 2016; Ferris et al 2021; Peltier 2010; National Advisory Council on Indian Education 1990; Romero-Little 2010; Reyhner 1994; August et al 2006; U.S. Department of Education 1993; Reyhner 2003; Gillispie 2021; Peltier 2017; National Center for Rural Early Childhood Learning Initiatives 2006; Nelson-Strouts and Gillispie 2017; Ashmore et al 2003; Hopkins et al 1998
	Contextualized language instruction	Promising	Preschool and school-age	August et al 2006; Gillispie 2016; Reyhner 1994; Ashmore et al 2003
	Play-based language instruction	Lacking	School-age	Peltier 2017
	Total physical response	Lacking	Preschool	Reyhner 2003
	Tell, show, help, praise	Lacking	School-age	Ashmore et al 2003
Literacy strategies				
Shared book interactions				
	Encourage positive affect and caregiver–child interactions during book and/or literacy-related activities	Compelling	Preschool and school-age	Peltier 2017: Ashmore et al 2003 Ferris et al 2021 Fayden 1997
	Embed literacy throughout children's existing routines	Lacking	Preschool	Ashmore et al 2003
	Shift responsibility to child during book reading	Compelling	School-age	Fayden 1997
	Point to pictures and text	Lacking	Preschool	Ferris 2020
	Respond to child's turns with book, asking questions about book, encourage dialogue during book reading	Lacking	Preschool	Gillispie 2021 Ferris 2020
	Reading instruction while engaged in children's literature	Promising	School-age	August et al 2006
Print knowledge				
	Alphabet knowledge	Compelling	Preschool	Morcom et al 2017; Gillispie 2021; Loeb et al 2011; National Center for Rural Early Childhood Learning Initiatives 2006; National Advisory Council on Indian Education 1990
	Identifying print after hearing words	Compelling	School-age	Fayden 1997
	Pointing to each word read	Compelling	School-age	Fayden 1997
Phonological awareness				
		Compelling	Preschool and school-age	

(Continued)

Table 4 (*Continued*)

Type of strategy	Specific strategy	Highest strength of strategy observed	Grade level	Source(s)
	Phonemic awareness including segmenting, isolation first and last sounds, sound play, blending			Mattatall 2011; August et al 2006; MacKay et al 2012; Ashmore et al 2003 National Center for Rural Early Childhood Learning Initiatives 2006; National Advisory Council on Indian Education 1990; Nelson-Strouts and Gillispie 2017
Phonics				
	Using nature manipulative in phonics instruction	Lacking	Promising	Morcom et al 2017
	Create textbook-based phonics activities	Promising	School-age	August et al 2006
Fluency				
	Teach site words	Lacking	Preschool	Gillispie 2021
	Teach word decoding	Lacking	Preschool	Gillispie 2021
	Partner read with a focus on fluency	Compelling	School-age	Mattatall 2011
	Fluency reading with corrections	Compelling	School-age	Mattatall 2011 MacKay et al 2012
Reading comprehension				
	Return sweep	Compelling	School-age	Fayden 1997
	Group read	Compelling	School-age	Mattatall 2011
	Read aloud	Compelling	School-age	Loeb et al 2011
	Repeated readings	Compelling	Preschool and school-age	Fayden 1997 August et al 2006 Ashmore et al 2003 Loeb et al 2011
	Teacher led comprehension activities	Promising	School-age	August et al 2006
	Basal approach/follow-up questions	Promising	School-age	August et al 2006
	Story comprehension questions	Lacking	School-age	Johnson 1991
	Visualization	Lacking	School-age	Johnson 1991
	Summarizing	Lacking	School-age	Johnson 1991
	Predicting	Lacking	School-age	Johnson 1991
	Provide contextual cues	Lacking	School-age	St. Charles and Costantino 2000
	Use graphic organizers to support comprehension	Lacking	School-age	St. Charles and Costantino 2000
	Link text to students' background knowledge	Lacking	School-age	St. Charles and Costantino 2000
	Re-teach main points of new content	Lacking	School-age	St. Charles and Costantino 2000
Multi-literacy				
	Creating books	Compelling	School-age	Peltier 2017: Fayden 1997
	Creating culturally resonant materials, photos, videos, living books, e-books, gestural and spatial forms	Lacking	Preschool and school-age	Peltier 2017: Ashmore et al 2003
	Audiobooks	Lacking	Preschool and school-age	National Center for Rural Early Childhood Learning Initiatives 2006 Inglebret et al 2011
Dialect bi-literate				
	Incorporation of Native American English Dialect and standard English dialect in reading, spelling, writing activities	Lacking	School-age	Peltier 2017
	Metalinguistic awareness and dialect instruction and contrasting in writing assignments	Lacking	School-age	Peltier 2017
Written language instruction				

Table 4 (*Continued*)

Type of strategy	Specific strategy	Highest strength of strategy observed	Grade level	Source(s)
	Process approach/writers workshop	Promising	School-age	August et al 2006
	Authentic language—experience-based writing instruction	Promising	School-age	August et al 2006
	Vocabulary square activity	Lacking	School-age	Hopkins et al 1998
	Writing narratives	Lacking	Preschool and school-age	Romero-Little 2010 Faircloth and Pfeffer 2008
	Analytical thinking in writing assignments	Lacking	School-age	Romero-Little 2010
	Dialogue journals	Lacking	School-age	St. Charles and Costantino 2000
Other approaches				
	Family literacy: early literacy kits for families	Lacking	Preschool	National Center for Rural Early Childhood Learning Initiatives 2006
	Multisensory strategies: Hands-on learning, visual-auditory, kinesthetic, tactile approaches	Compelling	Preschool and school-age	Mattatall 2011; Ashmore et al 2003; McCarty et al 1997; Reyhner 1994; Ramey and Sileo 1975; Loeb et al 2008
	Cooperative/interactive learning	Promising	Preschool and school-age	August et al 2006; Ashmore et al 2003; McCarty et al 1997 Loeb et al 2008
	Literacy through experiential learning, guided literacy of the land: names of plants, animals, preparation of food); indigenous stories	Lacking	Preschool and school-age	Ball 2012 ; Loeb et al 2008
	Having books in play centers	Compelling	School-age	Fayden 1997
	Authentic reading, reading about diverse experiences and identities, empowerment; indigenous stories	Lacking	School-age	Romero-Little 2010; McCarty et al 1997; Loeb et al 2008
	Literacy portfolios	Lacking	School-age	McCarty et al 1997
	Consider the entire text or holistic emphasis	Lacking	School-age	Robinson-Zañartu 1996; Loeb et al 2008

Indigenous children who are at risk for academic challenges or who have identified disabilities. This is despite the fact that Indigenous children have one of the lowest graduation rates in the United States, and they are proportionally the highest race/ethnicity group represented in Special Education services. To meet the educational needs of Indigenous children, more data-based research is needed to evaluate language and literacy strategies for this population.

Even with the shortage of treatment-based research with Indigenous children, this scoping review did provide a survey of the literature by identifying 43 potential language strategies and 49 potential literacy strategies described in sources. The strength supporting these potential 92 strategies varied; 28 of these strategies had compelling strength. Of strategies with compelling strength, several are frequently part of mainstream language and literacy strategies. For example, the language stimulation strategies of modeling language, use of demonstration and models while teaching, and encouraging children's questions and comments all had compelling strength and are frequently described in other language intervention packages. The same is true of the literacy strategies, and common literacy strategies that are frequently part of mainstream intervention were identified. Making cultural modifications to mainstream intervention programs and tailoring intervention strategies and procedures to a caregiver's or child's cultural background have been shown to be effective with other culturally and linguistically diverse groups.[12,50] This approach of adapting existent mainstream intervention strategies may provide needed insight that will ultimately result in well designed, culturally consistent language and literacy strategies for Indigenous children.

Of the strategies that had promising strength ($n = 19$) or lacked strength ($n = 45$), many appeared that they could be useful and cultural modifications or supplements could be applied to these strategies. These strategies need to be further studied to support their continued use or before they are widely adopted. For example, several narrative-based strategies had cultural aspects that could be very natural for caregivers or educators to implement with Indigenous children. These included

teaching listener–storyteller interactions and dialogue (comprehension and expression); providing multiple opportunities for storytelling; singing songs/stories; teaching children how to code-switch roles in storytelling in different contexts; and integrating tribal heritage and traditions into all aspects of storytelling. The same is true for the 10 bidialectal strategies and the two dialect bi-literate strategies described. What is important about the bidialectal strategies is that they support Indigenous cultural identity while supporting the acquisition of academic language that is needed for school success.

There were several strategies that had compelling strength that aligned with existent literature on language and literacy interventions. Modeling language, encouraging children to ask questions, encouraging children to make comments, using narrative based and story grammar strategies, targeted vocabulary, and targeted morphological or grammar instruction are all strategies that have been described in mainstream language approaches.[51] Reading with a focus on fluency, fluency reading with corrections, as well as reading comprehension strategies of *return sweep*, group read, read aloud, and repeated readings are well-established reading approaches.[51,52] In addition, all of the print knowledge and phonological awareness strategies identified in this review are supported by scientifically based reading research.[53,54]

Encouraging exposure and use of Indigenous languages was mentioned by 19 different sources, and needs to be further described and understood. It should be noted that 17 of the sources did not specify the tribe or Indigenous languages of the Indigenous population included or described in the source. In some instances, this may have been because more than one tribal group or language was included in the source. When studying language and literacy in bilingual children, it is important to have detailed information on language exposure and usage. More research is needed that is inclusive of a wide range of Indigenous languages. Careful consideration is needed by both researchers and clinicians when studying or intervening with Indigenous languages. For researchers, reporting languages used by study participants must be included as part of scientific reporting. For clinicians, an evidence-based decision-making approach must be used when deciding how to include Indigenous languages as part of language and literacy strategies.

With five nonrandomized treatment studies and one cohort treatment study identified, this scoping review found a shortage of language and literacy treatment studies with Indigenous children. Additionally, there were no treatment studies that evaluated language and literacy intervention approaches for children with identified disabilities, even though Indigenous children are highly represented in special education programs. The shortage of intervention research with Indigenous children is a recognized area of concern.[55] This parallels a field-wide shortage of treatment-based language and literacy interventions.[56] The lack of evidence relating to language and literacy strategies with Indigenous children is concerning for several reasons. One of these is that high-quality research-based strategies and interventions are needed for Indigenous children, given the projected increase in this population. This research is also needed to improve educational programming and access for Indigenous children, which is evidenced by the current trends of lower graduation rates and disproportionate special education representation.

In the spirit of evidence-based practice, speech-language pathologists (SLPs) must integrate information and act in accordance with the best available evidence. This scoping review identified 28 compelling language and literacy strategies, which can be applied and adapted to meet the needs of Indigenous children. There were also 19 promising language and literacy strategies, which can be applied but should be closely monitored in a case-by-case scenario to evaluate effectiveness and cultural appropriateness. Finally, nearly half of the strategies identified were lacking. Clinicians need to evaluate these closely to establish if they should be applied, including the rationale for their use, which may include evidence from research with other populations, as well as their observed effectiveness and their cultural appropriateness. The lack of research with children with disabilities is concerning; however, when faced with the lack of research to support practice, SLPs can draw upon related bodies of research to identify

promising approaches. The compelling and promising strategies described in this scoping review can be trialed with children with disabilities and evaluated on a case-by-case basis to establish their effectiveness. This also aligns with the American Speech-Language-Hearing Associations' position on the critical and direct role that SLPs have in developing, implementing, and collaborating with others in literacy instruction for children and adolescents.[57]

LIMITATIONS

There are several limitations to the current study. As a field more research is needed to provide higher levels of evidence for language and literacy strategies with Indigenous populations. A limitation to this scoping review was that the strength of strategy coding was based on the highest strength level found in *any* of the sources that included a description of a particular strategy. This means that strength of strategy coding of *compelling* could be assigned to a strategy that was described by 10 studies, only 1 of which had compelling strength. On a related note, there were only 5 studies that were ranked as having compelling strength, and those studies described a total of 28 strategies that were coded as compelling. An additional limitation has to do with the practicality of implementing the abundance model in the field. The abundance model may be a culturally consistent approach to understanding Indigenous children, but unfortunately, special education is inherently deficit based, and defined by legal mandates and guidelines that are deficit focused. For an abundance model to work, the policies and guidelines for special education processes would need to be reconsidered by policy makers and school personnel.

CONCLUSION

Promoting equity in speech and language services to Indigenous children requires SLPs to continually reflect on their cultural competency. Self- reflection is an important component of cultural competency, and leads to openness to shifting one's perspective or framework. The authors of the current study also believe that the *abundance model* will help SLPs make this perspective shift. The abundance model's focus on positive development; identifying and building up student and family assets; and highlighting the child's interest, strengths, skills, talents, and competencies can set the stage for intervention planning. Furthermore, the sources and strategies identified in this scoping review provide valuable information that can be used to guide intervention planning with Indigenous children and families. Combining this knowledge with meaningful dialogue with families and communities will lead to cultural modifications to existent strategies or the development of new strategies and ultimately to culturally consistent practices that will support the language and literacy of Indigenous children.

CONFLICT OF INTEREST
None declared.

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