Development and Feasibility of a Preschool Literacy Skills Curriculum Enhancement

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Doctor of Philosophy

by

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Dedication

I dedicate these last four years and this dissertation to my three little birds.

This is my message to you.

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This is not a reflection of a solo endeavor, but the achievement of everyone who has ever encouraged, mentored, challenged, and taught me. I could not have undertaken this journey without my advisor and chair of my committee, Dr. Emily Solari. I would like to express my deepest appreciation for her wealth of knowledge, unwavering work ethic, and deep commitment to children's literacy. Also, special thanks to my committee members, Dr. Jim Soland, Dr. Colby Hall, Dr. Latisha Hayes, and Dr. Amanda Williford, whose insightful feedback and expertise helped me grow as a scholar.

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Abstract

High quality early childhood instruction can be a powerful lever for promoting equity in educational success. However, researchers are still working to determine which elements of the preschool experience are most impactful for which children to maximize the sustaining preschool benefit. Preschool literacy instruction is one domain often examined. Recognizing the critical role of language and literacy skills in children's reading, writing, and academic achievement, researchers have sought ways to help teachers implement developmentally appropriate instruction in these areas across preschool settings. Instruction in this space can be challenging as teachers need to address multiple literacy skills across both word reading and linguistic comprehension domains. Moreover, supporting teachers across the varied contexts of preschool spaces presents challenges.

One proposed method of support is the use of curriculum materials. When developing a new curriculum, understanding barriers and facilitators to the implementation is an important first step to improve outcomes and ensure sustainability of a program. This study examined the development, implementation, and teacher perception of feasibility, acceptability, and appropriateness of a novel curriculum supplement, Val's Alphabet House. Val's Alphabet House is a brief instructional routine designed to explicitly and systematically teach alphabet knowledge and phonological awareness skills within a student-centered oral narrative. The current study had two primary aims: (a) to determine the extent to which Val's Alphabet House was implemented as designed, (b) to evaluate teachers' perceptions of feasibility, acceptability, and appropriateness as it relates to the program, and (c) to identify barriers and facilitators to implementation. This mixed method study used data from classroom observations, interviews, and surveys from 8 preschool classrooms and 13 participants. Overall, teachers' qualitative and

quantitative results indicated that teachers reported high levels of feasibility, acceptability, and appropriateness. Implementation fidelity was widely varied with a few patterns emerging related to preschool setting, age of students in the class, and content or structure of the task. The results suggest that Val's Alphabet House has evidence of being a feasible low cost, relatively resource-conservative program, that could be implemented in various settings with preschool students with the goal of improving early literacy skills in multiple domains.

Keywords: early literacy, preschool, curriculum feasibility

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Chapter 1: Introduction

Early Literacy Skills and the Simple View of Reading (SVR)

Decades of research have demonstrated the need for high quality literacy instruction in the early childhood space (Ehri, 2005; Hjetland et. al, 2020; Herrera et al., 2021; Whitehurst & Lonigan, 1998). Through the lens of the empirically tested Simple View of Reading (Gough & Tunmer, 1986), the component skills converge from two pathways (i.e. linguistic comprehension and word reading) to contribute to later overall reading comprehension. Evidence has repeatedly linked these early developing underlying component skills and competencies to later success in reading (Lonigan, 2003; National Early Literacy Panel [NELP], 2008; Schatschneider et al., 2008). These skills can be developed with high quality instruction and intentional decisionmaking; resulting early experiences show strong predictive associations with later literacy achievement (NELP, 2008; NICHD, 2002, Piasta et al., 2012).

The National Early Reading Panel (NEPL) conducted a meta-analysis to identify the early skills associated with later reading and writing competencies. This meta-analysis examined studies that contained assessments of literacy skills from when students were in preschool and then in kindergarten and older. Several of these skills are classified as code related (i.e. alphabet knowledge, decoding, sight recognition) and others are meaning related (i.e. background knowledge, vocabulary, literacy knowledge, language structures, verbal reasoning). Skills in both domains are shaped from birth to age five and are correlated with each other during development and with later literacy skills (Lonigan, 2003; National Early Literacy Panel [NELP], 2008; Schatschneider et al., 2008), although they are differentially predictive (Lonigan et al., 2006).

Importance of Oral Language on Future Reading

In addition to the code related and meaning related skills previously discussed, research has shown oral language to be related to and predictive of children's learning to read (Bratsch-Hines et al., 2019; Dickinson & Porche, 2011). Oral language can be thought of receptively and expressively including the subskills of vocabulary, syntax, narrative production, and oral comprehension (Longian et al., 2008). The National Early Reading Panel (2008) revealed that children with well-developed language skills were stronger readers at the end of first and second grade. Vocabulary, one aspect of oral language, is often used as one indication of the strength of oral language skills. Studies have examined how the number of words children know at a particular time point predicts their later reading success. Studies of this nature often refer to a "word gap" or the idea that children from a lower social economically status will have significantly less words than their more affluent counterparts (Hart & Risley, 1995). Although there are critiques (Kuchirko, 2017) to the idea of the vocabulary "word gap" existing between populations of students from more vulnerable populations, some children may require additional support to enhance their academic vocabulary alongside their already valuable lexicon (Bauer et al., 2016).

There are natural times through the preschool day that lend themselves to opportunities for oral language development. Language acquisition is enhanced when teachers respond to a child's interests and actively extend conversations (Cabell et al., 2015; Piasta et al., 2012). Typically, these sorts of exchanges take place during non-teacher directed times such as mealtime or center time. Despite spending approximately 30% of the day in free choice activities and 34% eating meals and taking care of personal and classroom routines, teachers do not

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capitalize on the opportunity to have extended conversations with students (Chien et al., 2010; Early et al., 2010).

Preschool tasks that focus on language often involve a shared reading experience to anchor open ended questions, vocabulary, and conversation. Shared reading is an interactive instructional practice where a teacher reads a text and encourages active participation from students (Hindman et al., 2012). Less common are teacher directed tasks that engage students in cognitively challenging conversations outside of the read aloud. These conversations include explanations, narratives, creating events, and sharing opinions and ideas not centered on the context of a story (Massey, 2004). Furthermore, outside of teacher directed time, research shows that overall, preschool teachers do not naturally engage children in high quality conversations to improve their language skills (Cabell et al., 2015).

Later reading comprehension is a complex process that involves the agile execution of various subcomponent skills, which students develop from the onset of school through deliberate interactions and direct instruction. Specific skills in word recognition, linguistic comprehension, and oral language should exist in a comprehensive instructional program. Finding a preschool curriculum that effectively fosters both early word recognition and linguistic comprehension skills, including oral language, can be challenging because it requires an integration of instruction and activities that promote understanding and use of language across domains. Researchers have begun to speculate about the critical elements that may characterize effective content-specific preschool curricula (Weiland et al., 2018).

Early Childhood Curricula

While research has well-defined which literacy skills and competencies to teach during the early childhood years, there is less consensus on the most effective and efficient ways to instruct in all domains (Joo et al., 2020; Marulis & Neuman, 2010; Piasta & Wagner, 2011). Evidenced based curricula is one way to support teachers in instructing students in all areas of reading (Ball & Cohen, 1996; Drake et. al. 2014; Joo et al., 2020). A curriculum is a written set of sequenced learning experiences and opportunities for use in the classroom and can assist in reducing the burden on teachers to search for unvetted materials online or outdated print sources (Schmidt et al., 2001). A high-quality curriculum serves to mitigate disparities in educational settings across lessons and classroom by ensuring all students receive instruction grounded in evidenced-based research (Yoshikawa et al., 2013).

In early childhood classrooms, two types of curricula exist: comprehensive (i.e. global or whole child) and targeted (i.e. academic domain specific). Comprehensive programs focus on supporting students' overall learning through curated experiences that encourage interactions between classmates and the teacher (Duncan et al., 2015). Targeted or skill-based curricula, focus primarily on developing a specific skill such as language, literacy, social emotional skills, or math (Joo et al, 2020). These more domain specific curricula can be used in conjunction with a more comprehensive program in an effort to increase student growth. For example, a meta-analysis of preschool curricula found that large improvements in students' pre-academic skills, cognitive abilities, and overall outcomes were attributed by the addition of a targeted curriculum to an Early Childhood Education (comprehensive) program especially if the addition was a language and literacy focused program (Jenkins, 2018).

However, there are mixed results regarding the effectiveness of early childhood curricula (Preschool Curriculum Evaluation Research Consortium [PCERC], 2008). For example, despite many of the curriculum evaluated in the Preschool Curriculum Evaluation Research Consortium (PCERC) focusing on literacy development, when compared to the business-as-usual approach, ten of the curricula did not show statistically significant impacts on students' outcomes in reading. Furthermore, no curriculum outperformed the control classroom across all child outcomes and only two curricula showed differences in even one skill measured in kindergarten. The report concluded, in general, no curriculum was notably more effective than the others. These studies illustrate a continued need to better understand the critical elements of preschool curricula and implementation (Weiland et al., 2018).

Challenges of Curricula Content and Design

The preschool landscape, nationally and at the state level, can differ significantly in terms of class size, the age range of students in each class, the educational background of teachers, and the amount of instructional time provided (Virginia Department of Education, 2022). Therefore, curricula for this context should consider how to maximize instructional time, be easy to implement, and require limited materials and cost.

One way to maximize instructional time is to address multiple instructional goals at once. Instructional simultaneity refers to the phenomenon of incorporating more than one instructional target into an individual part of the day (Duke et al., 2023). The area of foundational reading skills lends itself to instructional simultaneity because often these skills are used in tandem when reading, and research has suggested reciprocal relationships exist between many of the skills. Shared reading is an example of a well-researched high quality instructional practice that addresses multiple skills at one time (Zucker et al., 2013). By reading and discussing a text together, as in a shared reading task, students improve their understanding of the materials, learn print concepts, and develop vocabulary.

Another example is the connection between phonological awareness and vocabulary. One theory that explains the development of phonological awareness is the lexical restructuring model (LRM; Metsala & Walley, 1998). The model posits that as students' mental lexicons grow, their mental representations of the word shift from a more holistic form to a segmented form allowing them to access smaller speech sounds. Therefore, there is a connection between a child's vocabulary and their ability to continue developing their phonological awareness. Consequently, it is possible that instruction that promote students' oral language (including their vocabulary skills) will have a positive impact on their phonological awareness skills or will aid in the facilitation of phonological awareness skills by expanding their mental lexicon.

Lonigan and colleagues (2013) conducted a study of intervention synergistic effect focused on different early literacy skills by delivering the interventions independently and combined. Although there was so significant synergistic effect of combing code-focused interventions in terms of producing high scores, there were neither statistically smaller effects for the group that only received one intervention. This finding could suggest that the same amount of content was learned in half the time when paired with another literacy skill. Given the limited time that many teachers face during the day, and competing classroom priorities in preschool, addressing multiple components during one instructional period of time is an efficient use of time and could be effective for students who require additional instruction in multiple domains (Lonigan et al., 2013).

Challenges of Curricula Implementation

Implementing curricula with fidelity is important for practitioners as research has demonstrated positive associations on academic outcomes for students (Kretlow & Bartholomew, 2010; Vadasy et al., 2015). Fidelity is the degree to which a treatment, intervention, or curriculum program is implemented as intended (Moncher & Prinz, 1991). For example, Davidson and colleagues conducted a preschool study that examined fidelity of implementation of a supplemental literacy curriculum to the general curriculum. Findings revealed that children in classrooms where there was a high level of fidelity to implementation outperformed the low-implementing classrooms across measures of phonological awareness, letter-name knowledge, and beginning sounds (Davison et al., 2009). In contrast, additional studies have shown that once comfortable with a curriculum or program, teachers can use professional judgment and implement with more flexibly and improved student outcomes can be achieved (McMaster, 2014). The challenge is to balance implementing curriculum with enough fidelity to ensure maximal results while allowing for enough flexibility to fit the context (McMaster et al., 2014).

However, implementing curricula in the preschool space can be a daunting task and previous research has revealed poor curriculum implementation in preschool (Davidson et al., 2009). Research to date suggests that a combination of curricula focused on a specific domain (e.g. math, social emotional skills, handwriting), supported by teacher training and coaching provides the "strongest hope" or "good bet" model for increasing the quality of instruction in preschool (Phillips et al., 2018; Yoshikawa et al., 2013.) The results from research framed with this model illuminate six common features across studies that support implementation including (a) a focus on a specific instructional content (b) with a highly detailed script (c) including teacher voice (d) using in the moment data, (e) including planning time for teachers and (f) training for administers (Weiland et al., 2018). Although a relatively new model, incorporating and considering these elements when developing and implementing curricula could lead to improved outcomes.

Feasibility of Implementation

Implementation science research has also identified several factors that may influence the feasibility of implementing curricula in a school-based setting (Damschroder et al., 2022; Proctor et al., 2011). These include program-level, individual-level, school-level, and process level factors. Researching factors at each of these levels is imperative for sustained implementation. One way to focus on feasibility is to research the implementation process while simultaneously creating the curriculum. For example, Solari and colleagues (2018) developed an intervention for first grade students at risk for reading difficulties. The researchers were attempting to create a teacher-directed tier 2 reading intervention that could be delivered within the classroom setting by the teacher. After initial implementation, fidelity and quality ratings were sufficient, but teachers reported having difficulty adhering to the proposed schedules. The demands of the authentic classroom were prohibitive. Researchers collected feedback from teachers over the course of two years to make changes that would make the program as user friendly as possible. Solari and colleagues emphasize that interventions that are designed for implementation by classroom teachers must be streamlined and efficient as well as effective to ensure a greater chance of consistent implementation.

Similarly, Zucker and colleagues (2019) conducted four studies of a preschool and kindergarten vocabulary program with an iterative process to design a curriculum to meet the needs of teachers. The first study asked basic market research questions (e.g. which curriculum

features are feasible to implement), the second study explored how teachers and students interact with and understand the revised curriculum materials, the third study examined the training and curriculum materials for at-scale use within a statewide professional development program and the fourth and final study examined the feasibility and effectiveness of the program using a randomized waitlist control design. This iterative process effectively ensured that teachers could implement the program with fidelity and sustain its use by integrating their feedback into the design process. There is merit in scrutinizing the implementation procedures associated with newly developed curricula simultaneously.

Current Study

Introducing Val's Alphabet House

There are different approaches to early literacy curricula in the preschool space. Some focus primarily on one domain such as social emotional skills (e.g. Tools of the Mind), language (e.g. Language Focused Curriculum (LFC)) or vocabulary (e.g. The World of Words). Others take a more comprehensive approach and integrate multiple components (e.g., Core Knowledge Language Arts (CKLA) Preschool). However, as far as it is known, no program exists that attempts to teach multiple literacy components (i.e. alphabet knowledge, phonological awareness, and oral language) within the confines of a brief integrated routine that is not text dependent but rather driven by a student-centered ongoing narrative.

Val's Alphabet House is a preschool curriculum enhancement program designed for three- and four-year-old children that explicitly teaches alphabet knowledge and phonological awareness in a supported oral language rich context. The program seeks to coordinate explicit instruction of alphabet knowledge and phonological awareness without sacrificing the ongoing development of linguistic comprehension skills. This innovative method aims to assist teachers by clearly demonstrating how to efficiently and effectively develop these skills in children while serving as a professional learning opportunity for teachers. The program is designed to fit that vast array of early childhood landscapes (e.g., public-school settings and mixed-delivery center settings) and the readiness of the teachers in those spaces (i.e. teachers with and without early literacy training). The fast-paced, engaging curriculum is designed to be low cost, materials-conservative, and straightforward to implement in various settings with a range of ages of students (i.e., 3- to 4 -year-olds). It is theorized that specific design elements (e.g. use of consistent transferable routines, highly readable scripting, built in teacher support) paired with student-driven engaging content, will aid in high levels of sustained implementation.

Study Purpose and Significance

Despite the overwhelming research indicating which literacy skills need to be taught in the crucial early years and some initial evidence regarding the most effective ways to instruct students, there continues to be a need to support teachers in enacting these practices consistently. High quality evidence-based curricula could play a role in supporting teachers and the students in their classrooms. Moreover, there is a need for a curriculum that explicitly teaches early literacy foundational skills while supporting teachers in engaging students in complex conversations. Therefore, the purpose of this study is to develop and evaluate the feasibility of a 10-week language rich foundational skills curriculum enhancement program, Val's Alphabet House, delivered by preschool teachers in the United Virginia Quality Birth to Five System (VQB5) contexts. Feasibility studies are an especially important initial step when conducting classroombased research (van Teijlingen & Hundley, 2001). Newly developed programs, such as the proposed one, should be tested prior to an efficacy study to address elements such as the program content, mode of delivery, and the teachers' capacity to implement the program within real-

world constraints (Gadke et al., 2021). This study will involve utilizing a mixed methods approach to examine the feasibility of program implementation with the goal of determining barriers and facilitators.

Research Questions

This study's results will build on previous research in two ways. First, this study will evaluate teachers' implementation fidelity and quality of instruction. Secondly, the study will examine teachers' perception of acceptability, appropriateness, and feasibility of a newly developed preschool literacy skills curricula enhancement program that fosters both code based and meaning based foundational skills. Lastly, the study will identify perceived barriers and facilitators to sustained implementation across settings.

Specifically, the goal of this study is to answer the following questions:

- 1. To what extent are preschool teachers able to implement a newly developed curriculum enhancement with fidelity?
- 2. To what extent do preschool teachers perceive a newly developed curriculum enhancement as appropriate and feasible to integrate into their existing context and with their current teaching practices and routines?
 - a. What do teachers perceive as the barriers and facilitators of the implementation of a newly developed curriculum enhancement?

Chapter 2: Review of the Literature

This chapter delves into the theoretical underpinnings and empirical evidence that form the basis of the curriculum enhancement program under investigation. Empirical frameworks will be used to elucidate the components of early literacy development, drawing upon empirical research findings. Additionally, the conceptualization of these skills as either constrained or unconstrained will be explored, highlighting the instructional implications inherent in such categories. Next, an in-depth examination of the preschool context will be provided, considering its unique characteristics and the challenges it presents. The chapter will then detail the use of early childhood curricula and the implementation challenges that often accompany it. Potential solutions to address the perceived barriers to curriculum implementation will be proposed by examining the concept of curricular fidelity and the execution of feasibility studies. By investigating the feasibility of maintaining fidelity to prescribed curricula, strategies for overcoming implementation obstacles and optimizing program efficacy will be identified. After reviewing the literature, the theoretical and empirical foundations will be elaborated on to inform the design and implementation of the proposed curriculum enhancement program (i.e. Val's Alphabet House). This study's contribution to the broader knowledge base in the field of early childhood education will be outlined, emphasizing its potential implications for practice and policy. Finally, an overview of the current study will be provided, discussing its implications for the field of education at large.

Theoretical Models of Reading Development

Numerous theoretical models exist to unravel the complexities contributing to successful reading comprehension. However, since many factors that are studied in relation to reading comprehension originate in various research fields, forming a cohesive model that is easily

understood can prove challenging. In reading research, there are multiple models that all exhibit some similarities in origins while differing in their examination of what contributes to welldeveloped reading comprehension. These models provide valuable perspectives for educators seeking insights into the multifaceted nature of reading and can guide the translation of research findings into effective assessment and instructional practices. However, one model has been empirically tested in the preschool space and thus is used to frame this study.

The Simple View of Reading

One of the most universally recognized, utilized, and cited frameworks is the Simple View of Reading (SVR). In 1986, Gough and Tunmer introduced the idea of the Simple View of Reading, aiming to underscore the significance of decoding in achieving effective reading comprehension. The researchers were not advocating phonics-only instruction but recognized the harmful whole language approach to reading instruction that was prevalent at that time. They wanted a model that would highlight how two essential constructs both contributed to reading comprehension. Their proposal suggested that word reading and linguistic comprehension are both essential contributors to reading comprehension. Furthermore, reading comprehension is not possible without the simultaneous presence of these two constructs. In this context, decoding pertains to the reader's "ability to recognize printed words accurately and quickly to efficiently gain access to the appropriate word meanings contained in the internal mental lexicon" (Hoover & Tunmer, 2018). Language comprehension, on the other hand, involves the "ability to extract and construct literal and inferred meaning from linguistic discourse represented in speech" (Hoover & Tunmer, 2018). Both constructs play a role in reading comprehension, which refers to the "reader's ability to extract and construct literal and inferred meaning from text" (Hoover & Tunmer, 2018).

Through extensive research, there have been significant strides in understanding reading comprehension using the SVR. For example, studies demonstrate that the contribution of each construct to reading comprehension varies based on a student's reading development stage (Kim & Wagner, 2015). The word reading construct dominates development in the beginning stages of reading whereas linguistic comprehension dominates development as word reading skills become more proficient (Kim & Wagner, 2015).

Findings indicate that over time, listening comprehension, rather than word recognition, exhibits a stronger relationship with reading comprehension. This relationship is likely because word recognition skills tend to ceiling (in terms of how it is assessed) whereas language comprehension continues to develop. Chiu and colleagues (Language and Reading Research Consortium, 2018) assessed the oral language and code related skills of 305 students in preschool and then again in third grade. The researchers were investigating the predictions of preschool oral language (i.e. vocabulary, grammar, discourse) and code-related skills (i.e. letter and print knowledge, phonological processing) on grade 3 reading comprehension through the contributions of listening comprehension and word recognition. The study found that 94% of the differences in reading comprehension could be attributed to either word reading or listening comprehension. The researchers also reported there was longitudinal continuity between the preschool constructs and the grade 3 complementary constructs. Lonigan and colleagues (2000) conducted a study with 757 older students in grades 3 through 5. The researchers created latent variables for decoding, linguistic comprehension, and reading comprehension to assess the shared and unique variance of decoding and linguistic comprehension on reading comprehension. Across all three grades, 85%-100% of reading comprehension variance could be explained. As mentioned previously, linguistics comprehension in all grades accounted for the

largest amount of unique variance in reading comprehension. Importantly, Lonigan and colleagues' use of latent variables allowed them to refute previous studies that showed deficiencies in SVR by only using partial measures of the underlying constructs. Additionally, researchers found that in some analysis, up to 15% of variance was left unexplained and that there were instances of substantial amounts of shared variance (between 41% -69%) between decoding and linguistic comprehension and their relationship with reading comprehension (Lonigan et al., 2000).

Early Reading Development Within a Framework

The Simple View of Reading can be used to support literacy development for the earliest readers by revealing the underlying components necessary for success in future reading comprehension. The model emphasizes the need to address both word recognition and linguistic comprehension and assert that a comprehensive approach to literacy instruction should not neglect either of these broad constructs. The eventual goal of reading is to derive meaning from written text. Reading comprehension is a complex process that involves the agile execution of various subcomponent skills, which students develop through deliberate interactions and direct instruction. The early childhood period is particularly crucial for developing skills such as phonological awareness, print awareness, alphabet knowledge, and the subskills that support language comprehension. These skills begin to take shape from birth to age five and are strongly correlated with later literacy skills (Lonigan, 2003; National Early Literacy Panel [NELP], 2008; Schatschneider et al., 2008). SVR noticeably provides a straightforward approach that allows professionals in the field to easily understand and maintain focus on the most crucial components underlying reading success. Its simplicity and clarity make it an accessible tool for educators, offering a clear lens through which to view the essential elements of reading.

The Simple View of Reading has been repeatedly empirically tested across grade levels. Over 150 studies, involving readers from beginning to experts, and across child characteristics such as language and social economic status, have reached the same conclusion; skills in both the word reading construct and linguistic comprehension construct contribute to successful reading (Hoover & Tunmer, 2020). Many of those studies have been conducted in the preschool space. For example, Storch and Whitehurst (2002) conducted a study aimed at predicting reading comprehension in second and fourth grade from the oral language skills and code-related skills of preschool students. The study supported SVR by showing two pathways to later reading comprehension: a linguistic comprehension pathway and a code-related pathway. The Language and Reading Research Consortium (2018) examined how well preschool skills predicted third grade outcomes through the two core components of the simple view. Researchers found strong relationships between the pre-K skills and the complementary Grade 3 constructs of listening comprehension and word recognition. Hulme and colleagues (2015) conducted a large-scale study of 245 preschoolers that reinforced the importance of focus language skills and code-based skills using the SVR framework. Lonigan and colleagues (2000) used the Simple View Framework to examine the developmental continuity of skills using two different samples of preschoolers. The historical validation of the SVR allows researchers and practitioners to use it with confidence.

Components of Early Literacy Development

As conceptualized by the SVR model, as well as others, researchers have identified what components of early literacy development are imperative for future success and therefore what the focus of early literacy instruction, curricula, and assessment should be. As portrayed in the aforementioned framework, skills belong to two main constructs: word reading and linguistic comprehension. Skills from both domains need to be systemically and explicitly taught to students if they are to develop into skilled readers.

Code-Related Skills

Code-related skills are instrumental in students' capacity to grasp the alphabetic principle effectively and develop proficiency in reading text with accuracy and fluency. These skills include constructs such as alphabet knowledge, phonological awareness, and print awareness. Although print awareness is an important foundational skill, alphabet knowledge and phonological awareness are more pivotal to later word reading and thus are the focus of the proposed curriculum.

Alphabet Knowledge

Alphabet knowledge refers to the knowledge of letter names, shapes, and sounds and is one of the most widely recognized goals of early childhood literacy instruction due to its highly predictive power of later reading and writing (Hammill, 2004; National Reading Panel [NRP], 2000; Snow et al., 1998; National Early Literacy Panel [NELP], 2008; Piasta & Wagner, 2010; Schatschneider et al., 2004). Alphabet knowledge acquisition typically begins in preschool and continues through first grade. During this period of growth, students learn how to discriminate between and identify 26 uppercase and lowercase letters that may be visually similar and/or have names with phonological similarities. Further, students learn how to form these letters accurately and efficiently using handwriting conventions and associate each letter with the phoneme or phonemes that it represents. Students who have difficulty in acquiring alphabet knowledge often have difficulty with other skills required of proficient reading (NELP, 2008; Piasta & Wagner, 2010).

Phonological Processing

Research has identified three processing abilities related to phonological processing including phonological awareness, phonological access to lexical store, and phonological memory. Phonological awareness is the ability to hear to and manipulate the sound structure of oral language (Torgesen et al., 1987). From simple to complex, the units of sound include compound words (e.g., catnap), syllables (e.g., picnic), onset-rime (e.g., /st/ - /ick/), and phonemes (e.g., $\frac{1}{1} - \frac{1}{2}$). Research demonstrates that students who are better able to detect these units of sound are able to learn to read more quickly (Adams, 1990; Stanovich, 1992; Wagner & Torgesen, 1987). Phonological access to lexical store is the ability to efficiently retrieve phonological codes from permanent memory (Wagner & Torgesen, 1987). This construct is often measured by the rapid naming of letters, digits, or colors. Access to the lexical store is a predictor of growth in decoding skills (Wagner et al., 1994, 1997). Phonological memory refers to the coding of information in a sound-based representation system for temporary storage. This refers to a child's ability to immediately recall a piece of information (Wagner et al., 1994, 1997). A substantial body of evidence indicates that phonological memory is a large predictor of later reading skills (Longian et al., 1998, 2000). Research has demonstrated that phonological awareness is correlated with reading success and facilitates other literacy skills, such as decoding and automatic word recognition, which are necessary for fluent reading and reading comprehension (NELP, 2008).

Laying the Foundation for Orthographic Mapping

As students' progress through the stages of reading, they transition from decoding individual letters and sounds to recognizing complete words instantly upon sight (Ehri, 2005). The process of forming permanent connections between the visual form of a word, the meaning, and the pronunciation is the cognitive process known as orthographic mapping (Ehri, 2005). This process allows readers to quickly recognize and retrieve familiar words, leading to increased reading fluency. Effective instructional practices that promote orthographic mapping include explicit instruction in phonics, vocabulary development, and exposure to text-rich environments that provide ample opportunities for repeated encounters with words in authentic contexts (Ehri, 2014; Treiman & Kessler, 2014; National Early Literacy Panel, 2008). In the preschool stage of development, instruction that develops automatic letter sound recognition, ability to hear and manipulate speech sounds, and the constant development of language skills all lay the foundation for eventual automatic word retrieval.

Meaning Related Skills

Meaning related skills (i.e., language or listening comprehension) are skills primarily associated with language that enable students to comprehend text that is read aloud to them or that they read to themselves. Language comprehension is the ability to understand various aspects of spoken language and includes constructs such as background knowledge and vocabulary, language structures (i.e., syntactic and semantic knowledge), verbal reasoning (i.e., ability to understand and reason), and literacy knowledge (e.g., knowledge of text structures). The National Early Literacy Panel (NELP, 2008) report noted that language comprehension played a bigger role in later literacy achievement when evaluated using more complex measures that included grammar, vocabulary, and listening comprehension than when evaluated using vocabulary alone. More recently, the Language and Reading Research Consortium (LARRC, 2015) also found that the contribution of language skills to reading comprehension relative to decoding skills increases substantially over the early elementary years resulting in language skills contributing more than decoding skills by age ten.

Vocabulary

Specifically, vocabulary and background knowledge contribute to reading comprehension by providing a foundation for meaning construction. Numerous studies have revealed the significant contribution of vocabulary knowledge to reading comprehension (e.g., Apthop et al., 2010; Cunningham & Stanovich, 1997). Research indicates that students with a sophisticated vocabulary in preschool tend to exhibit improved reading comprehension in later grades (Dickinson & Porche, 2011). Moreover, a child's early vocabulary can serve as a predictor of later reading achievement (Cunningham & Stanovich, 1997).

Oral Language Contribution to Reading

Oral language can be classified as receptive and expressive and includes highly interrelated components including semantics, syntax, morphology, phonology, and pragmatics. *Morphology* is the element of language concerned with units of meaning within individual words (e.g., adding -ed to jump to indicate it occurred in the past). *Phonology* refers to the units of sounds within words (e.g., there are four sounds in the word flip; /f/, /l/, /i/, /p/). *Semantics* is the meaning of words and phrases (e.g., the word dark can mean without light or a way to describe an sinister character or show). *Syntax* refers to the rules that govern how language is put together to build sentences (e.g., the adjective is typically before the noun in English). *Pragmatics* is the way language is used to convey meaning in different contexts (e.g. understanding the use of idioms). Decades of research have demonstrated that oral language skills set the foundation for reading and writing development (Cutting et al., 2009; Kendeou et al., 2009; Roth et al., 2010)

Oral language skills rapidly develop in the early years of childhood as exhibited by approximately 10,000 vocabulary words that students acquire from birth to the age five (Childers & Tomasello, 2002). Development during this time period begins with one-word utterances and

moves into more complicated sentences containing more sophisticated vocabulary. Robust conversation is one of the most beneficial ways to develop students' language skills (Bond & Wasik, 2009).

Oral language skills establish the foundation for more applied linguistics capabilities such as inferencing and comprehension monitoring. While many students readily obtain mastery of oral language skills, some students struggle early on, often resulting in reading difficulties later. Longitudinal studies have drawn direct links between oral language and later reading comprehension (Lonigan et al., 2008). Prior to kindergarten, a unitary dimension for elements of language including vocabulary and grammar exists, but as students consolidate skills in the lower dimensions of language (e.g., vocabulary and grammar), the multifaceted dimensions of language are more easily seen in older students (Language and Research Consortium, 2015). Early deficits in language skills are associated with later reading difficulties (Torgesen, 2004; Snow & Burns, 1998). Young students with language impairment are 6 times more likely to have a reading impairment than their typically developing peers (Stoeckel et al., 2013). Older students who struggle with reading comprehension exhibit unnoticed oral language delays in early grades that foreshadow the late emerging reading difficulties (Catts et al., 2012). However, less than one-third of students with language impairment are identified before they struggle to read (Adlof et al., 2017).

Conversations are a primary tool for language development in preschool classroom and can take place in many different areas of the instructional day (Dickinson et al., 2003; Snow et al., 1998). However unfortunately, opportunities to have meaningful conversations between students and adults may not exist in preschool classrooms or may vary greatly across preschool settings given the competing demands on teachers' time. Students need opportunities for language to be modeled for them, to talk and practice their language skills, and to get feedback on language. By dedicating a place for intentional language interaction to occur within a foundational skills lesson, teachers will have additional time to promoting language and vocabulary development as research has shown more intentional language instruction is necessary (Bond & Wasik, 2009; Phillips et al., 2018).

Balancing Constrained and Unconstrained Skills to Address Preschool Fadeout

Another way to consider the subskills needed for later reading comprehension is to distinguish between constrained and unconstrained skills. Constrained skills refer to skills that typically can be learned to mastery in a relatively short time frame (e.g. letter names, letter sounds, spelling one's name) (Snow, 2005). These skills are more often associated with the word reading domain and are often the focus of instruction and assessment. Unconstrained skills are developed across a lifetime and become more complex as students age. These broad competencies can never be fully mastered as they continuously develop (Snow, 2005). These include skills such as vocabulary, oral language, and composition; skills found in the linguistic comprehension domain. The different nature of these two constructs impacts the ability to measure growth in these areas and therefore it can be difficult to discern the best way to instruct in these areas.

Research has long been interested in the short- and long-term effects of the preschool experience to clearly report where instruction time and energy should be spent, as well as the most effective ways to engage students in content. In a recent study, researchers examined the impacts of state-funded preschool by comparing students who attended the state-funded preschool program to those who did not (Durkin et al., 2021). The researchers analyzed results at the end of preschool and also again when those students were in third grade. The results at the

end of the preschool year were positive, showing greater academic gains over the students who were not enrolled in the program. However, by the time those students were in third grade, there were no academic benefits compared with students who did not attend preschool. In some cases, the students who attended preschool had worse academic and behavior outcomes than their peers.

These findings are in alignment with previous studies (Lipsey et al., 2018; Puma et al., 2010) and researchers have been exploring reasons contributing to this *fadeout* effect. One hypothesis to explain this fadeout is motivated by work on constrained skill theory (Paris, 2005). The theory posits that preschool programs may focus more time on teaching and assessing constrained skills compared to unconstrained skills, and constrained skills may be less likely to be sustained across time. But constrained and unconstrained skills are not separate, distinct categories in conflict with each other. Research supports instructional approaches that focus on supporting both constrained and unconstrained skills. However, the limited amount of time spent on academic instruction in preschool classroom remains focused on constrained skills (Claessens et al., 2014).

The development of more constrained code-related skills (e.g. alphabet knowledge) and unconstrained meaning-related skills (e.g., vocabulary), as well as oral language skills are all critical for future reading and writing success. Code related skills enable children to decode and recognize words, while meaning-related skills help them understand and interpret text. Oral language skills, which include listening and speaking, provide the foundation for both code and meaning-related skills by enhancing vocabulary and listening comprehension. Simultaneously instructing in these areas ensures a harmonious approach to literacy development, advancing children to eventually become proficient readers who can both decode text and derive meaning from it.

The Preschool Context

The Institute of Education Science (2019) reported that in 2017 about 69% (up from previous years) of 4-year-old children in the United States participated in some form of early childhood program including public-funded state or national programs, non-profit, and for-profit. Each setting carries its own unique approach and philosophy towards early childhood education. High-quality programs (i.e. programs that stimulate child development), regardless of funding source, can offer substantial short-term benefits to all children, although the longer effects are less clear (Duncan & Magnuson, 2013; Lipsey et al., 2018; Phillips et al., 2017). In many states, publicly funded programs are targeted programs for vulnerable students. Publicly funded preschools commonly face challenges related to resource allocation.

Publicly funded preschools, such as Head Start and state-funded programs, often operate with limited budgets which could impact the availability of resources compared to a for-profit preschool. Early childhood education (ECE) programs that are publicly funded provide services through three different delivery method: subsidized childcare (i.e., private businesses that receive public funding to serve students of all ages), federally funded Head Start (i.e. serves qualified students age birth through age five), and public school-based pre-kindergarten (i.e., programs funded by state or local dollars, and often serves only three and/or four year olds). While all three delivery methods receive some sort of public funding, the level of funding can vary greatly from center to center as well as quality regulations, teacher pay, benefits, and professional opportunities (Whitebook et al., 2014).

Each of the three distinct sectors vary widely in their credentialing requirements, rates of compensations, and other structural factors (Totenhagen et al, 2016). For example, a teacher in a public school-based four-year-old pre-kindergarten classroom is likely to be required to possess a teaching license and will be paid in alignment with the teacher scales. However, a four-year-old classroom teacher in subsidized community preschool center may hold a high school degree and make minimum wage or less.

Across contexts and settings, the majority of preschool children typically spend time during the day in three categories; free choice, teacher-assigned, and meals and routines (Early et al., 2010). During free choice, students decide what to do in a specific area given specific material (e.g. center time). Teacher-assigned time is when students participate in an activity that was chosen for them by the teacher. This task may occur in whole groups, small groups, or individually. Meals and routines fill the remainder of the day. This includes going to the bathroom, cleaning up a center, or transitioning outside. Although most educators would argue that students need to spend time in all three categories, specific guidance for appropriate proportions is often lacking and therefore can vary substantially across contexts.

On several classroom observation rating scales, free choice is clearly valued given its impact on scoring. However, Chien and colleagues (2010) found that prekindergarten children who spent a large portion of their day in free play with limited adult interactions made the least amount of gains in academic and social areas. This finding underscores the importance of highquality adult-child interactions regardless of the setting students are in. Although there is variability in preschool experiences for students across settings, there are standards at both the national and state level that outline for teachers what content is important for the age of students
with whom they are working. These standards are in place to help ensure equitable instruction and to showcase priority skills and concepts.

Preschool Learning Standards

At the national level, The Head Start Early Learning Outcomes Framework (NCECDTL, 2020) outlines expectations for students in these formative years of birth to age five. This framework, consolidated by researchers who examined and synthesized research in this field, identifies domains critical for growth and development during early childhood learning. There are five Central Domains including (1) approaches to learning; (2) social and emotional development; (3) language and literacy; (4) cognition and perceptual; and (5) motor and physical development. These central domains are split into infant/toddler domains and preschooler domains. For example, in the literacy sub-domain print and alphabet knowledge, the indicator states that by age 60 months, students should be able to name 18 upper- and 15 lower-case letters and know the sounds associated with several letters.

At the state level, Virginia has a unified set of comprehensive early learning and development standards for young students birth to age five called Virginia's Early Learning and Development Standards (ELDS), Birth-Five Learning Guidelines. These guides articulate the skills and knowledge students need to demonstrate by the end of their preschool experiences to be successful in kindergarten. The guides focus on five areas of development including (1) approaches to play and learning; (2) social and emotional development; (3) communication, language, and literacy development; (4) health and physical development; and (5) cognitive development (science, social sciences: people, community and culture, mathematics and fine arts.) For example, similar to the national standards, under the area of communication, language, and literacy development and by age 60 months students should be able to "recognize many

upper- and lower-case letters" (Virginia Department of Education, 2022). In each domain set forth by national and state standards, teachers need to employ evidence-based instructional practices to ensure optimal child development within each domain.

Evidenced Based Practices in Preschool

There is consensus that both national and state standards delineate the fundamental skills and knowledge that students should acquire during the early childhood stage. Although there is less consensus on the most efficient and effective way for teaching students in these domains, research has identified specific practices as more effective than others. These practices are supported by rigorous scientific research.

Direct and Explicit Instruction with Scaffolding

Explicit instruction is a systematic and direct approach to teaching that aims to reduce cognitive load by utilizing high-leverage routines and clear language (Hughes et al., 2017). Explicit instruction incorporates modeling with clear, concise language, guided practice with scaffolding and feedback, and independent practice opportunities to obtain mastery of a new concepts or skill (Gersten et al., 1986). Complex skills or concepts are broken down into small units of instruction, providing access points for students to associate the new learning with previously learned information.

Research on explicit instruction originates from various disciplines and theoretical models, and its effectiveness is substantiated by extensive research spanning several decades (Hughes et al, 2017). Literature reviews, syntheses, and meta-analyses (e.g., Vaugn et al., 2000; Ehri et al., 2001) across all content areas consistently underscore the efficacy of explicit instruction. Organizations such as the Institute of Education Sciences have published practice guides outlining the implementation of explicit instruction practices derived from this research (Institute of Education Sciences, 2019).

Structured and Sequential Instruction

Structured and sequential instruction refers to the overall organization and design of the instruction. It requires the identification of elements to be sequenced and then organized into a logical manner. Sequenced instruction gives students an understanding of where specific skills or content stand within a broader context of knowledge. Reigeluth and Merill (1979) define two fundamental types of instructional strategies: "macro" strategies and "micro" strategies. The two terms differ in the scope of content they apply, and the level of memory required for storage and retrieval. Macro strategies are used to sequence several different content ideas and are concerned with the organization of memory. Micro strategies are used to teach individual ideas and are concerned with memory acquisition. Therefore, macro strategies endure over longer periods of time and should influence transfer of skills. (Reigeluth & Merill, 1979).

The importance of sequencing in instruction can be traced to the work of B.F. Skinner (1953) whose work has had an influence on the field of instructional design. His work stressed the contiguity between stimulus, response, and contingency of reinforcement (i.e. S-R-S chaining) and impacted many other instructional theorists' works such as Glaser (1970) and Markle and Tiemann (1969). More recently, an abundance of evidence suggests that students benefit from sequential reading instruction (Ehri et al., 2001). For example, although there is not an agreed upon scope and sequence of letter names and sounds, researchers and practitioners agree that certain letters should be separated from each other when first introduced (e.g. letters that are visually similar or have similar sounds), and high utility letters (e.g., m, a, s) should be taught before lower utility letters (e.g., v, w, x) (Piasta et al., 2010). Regardless, the presence of a

logical, well- thought-out scope and sequence will facilitate students' learning by laying previously learned concepts onto existing knowledge and reinforcing connections between content.

Opportunities for Practice and Cumulative Review

Students often require repeated opportunities to practice a new skill before achieving proficiency (Willingham, 2009). This need is especially pronounced among students with highincidence disabilities, who may struggle to retain content (Swanson & Deshler, 2003). Teachers can support students by structuring learning activities and tasks to offer diverse practice opportunities. Research has identified three effective approaches to practice: distributed, cumulative, and interleaved (Carnine, 1989; Dunlosky et al., 2013). These strategies follow the mass practice often conducted immediately after introducing a new skill. Distributed practice (i.e. spaced practice) is the practice of scheduling short practice sessions spread out over a longer duration (Dunlosky et al., 2013). Research in this space has been applied to motor skills and cognitive skills across academic domains. Cumulative practice is the process of layering a newly acquired skill to previously learned skills and practicing them together (Mayfield & Chase, 2002). Cumulative practice that is distributed over time is more effective for long-term retention. Research indicates that when students practice similar items in blocks, meaning they practice the same type of problem repeatedly before moving on to the next set, the effectiveness of cumulative practice diminishes (Rohrer & Taylor, 2007). Conversely, interleaved practice mixes up accumulated skills within a session so that a different skill is practiced after completing another skill (Rohrer, 2012). Interleaved practice is beneficial for long-term retention and generalization. Providing intentional practice opportunities promotes competence, which often improves motivation and engagement (Hughes & Lee, 2019).

Early Childhood Curricula

Given the mixed results of long-term effects in preschool, advocates seek to find levers that can be used to improve the quality of education. The aim of ensuring access to quality early childhood care and education highlights the importance of defining what quality means by pinpointing the strategies and approaches that lead to positive outcomes for children. Curricula is one support deemed to improve the quality of preschool learning environment with both Head Start and the National Association for the Education of Young Children (NAEYC) recommending the use of a curriculum (Office of Head Start; NAEYC, 2003). Curricula offer support to teachers by allowing them to rely on predeveloped structured learning activities rather than designing all learning experiences from scratch. Effective preschool curricula can help ensure that students are provided the opportunities necessary to learn and develop by guiding the teacher in instruction and offering activities to engage students (Joo et al, 2020). The use of curricula often includes the materials and resources needed to implement the curricula so students are also exposed to materials they may otherwise not be. The curricula outline the knowledge and skills that students should acquire through the learning experiences offered by the curricula. Many preschool classrooms employ the use of a "comprehensive," "whole child" or "global" curricula (Duncan et al. 2015). These curricula focus on supporting students' overall learning through curated experiences while simultaneously encouraging interactions between classmates and the teacher.

Skill-based curricula, sometimes referred to as enhancement programs, focus more on developing students' language, literacy, or math skills by offering tasks and activities that promote the growth of a specific skill (Joo et al., 2020). These programs can be used in conjunction with a broader curriculum (e.g., Highscope) or as a supplement to the daily activities

of the classroom. Oftentimes these curricula include more explicit instruction using evidencedbased strategies to improve a specific academic area to increase school readiness. These curricula posit that students benefit most from sequenced, explicit instruction. However, it should be noted that skills-based curricula are not synonymous with developmentally inappropriate instruction. Well-designed skills-based curricula can offer engaging joyful whole group and small group experiences, including opportunities for play, for students while concurrently developing specific skills.

There are mixed results regarding the effectiveness of early childhood curricula. The most comprehensive evaluation of prekindergarten curricula to date in the United States is the Preschool Curriculum Evaluation Project (PCER) which conducted 14 randomized trials of different curricula around the country (Preschool Curriculum Evaluation Research Consortium, 2008). The PCER team found that 13 different curricula had no impact on students' reading or phonological awareness skills as compared to teacher-created activities and lessons. However, when the team of researchers re-analyzed results by looking at the impact of studies across categories (e.g., literacy-focused, mathematics-focused, whole-child, teacher-created) it found that students in the literacy-focused curriculum outperformed students in the whole-child and teacher-created curriculum on measures of the Peabody Picture Vocabulary Test, and the Woodcock Johnson Letter-Word Identification, and Spelling subtests. Additional studies of enhancement programs also have shown positive impact on learning outcomes for students. For example, Lonigan and colleagues (2011) conducted an RCT to evaluate the effects of an academic skills-focused curriculum. This was one of the first studies that used a causally interpretable design to evaluate the effects on child outcomes. Results revealed a moderate effect on oral language, phonological awareness, and print knowledge skills.

Additionally, a meta-analysis of preschool curricula found that large improvements in students' pre-academic skills, cognitive abilities, and overall outcomes were attributed by the addition of a skill-based curriculum to an ECE program especially if the addition was a language and literacy focused program (Chambers et al., 2016).

As there continues to be time and effort spent on advocating for the continued and increased investment in early childhood educations programs, a question of growing importance is how to support ECE programs using curricula materials to maximize their effectiveness. Curricula serves as a key feature in not only supporting the classroom teacher but also in supporting policy makers to monitor initiatives. Curricula guidance often offered by states and other interested parties may be an important policy lever through which to influence the quality of preschool programs (Duncan et al., 2015). However, it is still unclear what specific components are more beneficial for promoting students' learning and development across all areas.

Implementing Curricula with Fidelity

Although curricula are often used as one crucial element in high-quality preschool classrooms, teachers do not always implement curricula as intended (Piasta et al., 2015). This gap between publisher intent and teacher execution is often measured in research studies and is referred to as fidelity of implementation. Fidelity of implementation is the extent in which a program is implemented in alignment with the original program design (O'Donnell et al., 2008). Prior research suggests a positive association between dimensions of implementation fidelity with evidence-based instruction and academic outcomes for students (Kretlow & Bartholomew, 2010; Vadasy et al., 2015). Fidelity is often examined by evaluating adherence, dosage, participant responsiveness, quality, and program differentiation (Dane & Schneider, 1998; Hill et al., 2019). Through this lens, the program's structure and the process of using it can be examined. Previous research of preschool interventions has reported low levels of implementation fidelity. In a study of pre-kindergarten language and literacy curriculum, Piasta and colleagues found teachers only delivered 73% of the intended lessons, with anywhere from 76-82% adherence (Piasta et al., 2015). In a recent study Combs and colleagues (2022) explored classroom-level factors on implementing evidence-based intervention in a middle school setting and what modifications were being made that impacted fidelity. They found a strong inverse relationship between fidelity of implementation and modification to the curriculum, student misbehavior, and shortage of time.

To further exacerbate the issue, fidelity is often underreported in studies (Swanson et al., 2011; Capin et al., 2018; Dahl-Leonard et al., 2023). Although the number of studies reporting fidelity seems to be rising, not all domains are reported. Spanning the previously mentioned syntheses, findings revealed that studies that report fidelity, primarily report on the domains of adherence only. This leaves an understanding of implementation fidelity across domains (i.e., adherence, dosage, responsiveness, differentiation) in studies to be lacking.

Fidelity reporting is important because it enables policymakers and school leaders to make decisions regarding curricula and instructional approaches by relying on the causal inferences that researchers report. Additionally, fidelity reporting can provide insight into whether an innovation is feasible to implement. Assessing the viability of an innovation is essential for its practical application in real-world applications, expanding efforts to a larger scale, or adapting it to different populations or environments (Nelson et al., 2012; O'Donnell 2008: Solari et al., 2020).

Implementation Challenges

Low implementation fidelity, while concerning, is not surprising. Implementing curriculum successfully in a classroom can be a daunting task. Research has identified various barriers to implementation that can be challenging for educators to overcome (Damschroder et al, 2022). These barriers can be viewed at the innovation-level (i.e., curriculum or program), individual-level (i.e., teacher), or school-level (i.e., system or center).

Teacher Knowledge and Skills

Prior research has shown that teachers' content knowledge correlates to their ability to engage students in tasks and facilitate language development (Schacheter et al, 2016). It can be challenging for a curriculum to provide the appropriate level of teacher support to efficiently scaffold a child's language in the moment. Teacher knowledge and skills are linked to their ability to use the scripting of the curriculum while also responding to the needs of the students in the moment. Additionally, a teacher's skill at managing a discussion within an activity can impact the quality of the interaction that occurs within a curriculum (Cabell et al., 2019).

Demands on Instructional Time

There are often competing priorities within a classroom. Teachers may struggle to cohesively integrate all requirements put forth by a center, school, or division. In a study by Zucker and colleagues, 71.88% of coaches working to support the implementation of a preschool vocabulary program reported competing priorities as the largest barrier to curriculum implementation (Zucker et al., 2021). Teachers from the study reported challenges with the schedule and problems aligning the content of the intervention to the pacing of other content outlined by the school.

Teacher Turnover

Research has not confirmed the rate of teacher turnover in the early childhood education space. The nature of the funding, variations in centers, and lack of system-wide data result in challenges in tracking teacher movement within and across sectors. However, Bassok and colleagues (2021) conducted an analysis of state-level data from Louisiana to determine what proportion of teachers working in a publicly-funded center were still employed in the same program the following year. Additionally, they examined patterns across centers and patterns across individuals who stayed and those who exited. Their findings showed that more than a third of ECE teachers observed in year one were no longer at that same program in year two. Given these barriers to implementation, it is important to assess why these barriers exist and determine ways to overcome them for increased fidelity. Ease of implementation with clear routines are critical given the high incidence of teacher turnover.

Feasibility Studies

Working to answer the question, "Can this study be done?", feasibility studies are often implemented prior to conducting an outcome-focused pilot study or a full-scale evaluation of effectiveness of an intervention (Gadke et al., 2021). Feasibility studies enable researchers to determine whether a program is appropriate for further testing and helps identify any necessary changes and how those changes might occur prior to progressing to a full-scale effectiveness or efficacy study (Bowen et al., 2009). Using feasibility research as one step in the whole research process is a way to advance intervention that is worthy of additional testing.

Elements of what constitute feasibility have been conceptualized in various ways. Bowen and colleagues (2009) proposed eight general areas of focus that feasibility studies can address: acceptability, demand, implementation, practicality, adaptation, integration, expansion, and limited-efficacy testing. Acceptability focuses on the reaction from those involved with implementing the intervention and the ones receiving it. Demand can be captured by collecting data on anticipated use or by documenting actual use. Implementation refers to the extent, likelihood, and the way an intervention can be implemented as planned. Practicality focused on whether the intervention can be delivered when resources, time, commitment, or some combinations are constrained in some way. Integration focuses on more system level changes that either happened because of the result of implementation or that needs to happen to ensure true feasibility of the intervention. Expansion analyzes an already-successful intervention and hypothesizes potential success with different populations or settings. Limited-efficacy testing refers to feasibility studies designed to test sample effectiveness in a limited way (e.g. convenience sample, limited statistical power, shorter time periods).

Similar to Bowen and colleagues, Tickle-Degnen (2013) conceptualizes feasibility as four distinct aspects in rehabilitation intervention. These domains include process, resources, management, and scientific assessment. *Process* refers to the number of available participants and the likelihood the participants will remain in the study. *Resource* considers elements such as the physical space demands, technology requirements, timelines, and motivation of participants. *Management* focuses on the skills and expertise of the primary researchers and the research team to carry out all aspects of the project. Lastly, *scientific assessment* considers reliability and validity of the procedures, criteria for significant change, and characteristics of the population that will benefit.

Building on the work in the medical and health-related field, Gadke (2019) and colleagues proposed a feasibility framework within the education context that includes ten possible domains, including recruitment capability, data collection procedures, design

procedures, social validity, practicality, integration into existing systems, adaptability, implementation, effectiveness, and generalizability. Even well-supported evidence-based programs can be unsuccessful when moving from clinical implementation into real-world contexts such as schools and classrooms. Pilot studies and RCTs often work to answer the question, "Does this program work?" while feasibility studies focus on the intervention process and ask the question, "Can this work? How does this work?" (Orsmond & Cohn, 2015). By focusing on the process, feasibility studies support the development and implementation of larger studies. Oftentimes, in the medical field, "feasibility trials" have an over-emphasis on treatment outcomes and minimal focus on feasibility objectives (Arain et al., 2010; Shanyinde et al., 2011). This over-emphasis on outcome measures in feasibility studies can translate to problems in the future full-scale study. Issues with acceptability, implementation, or recruitment and retention may be avoided by focusing on the process of implementation as the main objective (Shanyinde et al, 2011).

There is well-documented research to practice gap that exists in education (Solari et al., 2020). Feasibility studies have the potential to impact that gap by specifically targeting the study of the implementation process. Researchers can focus on identifying potential barriers and facilitators to implementation. Feasibility studies also have the power to improve the methodological quality of future studies. During a feasibility study, researchers can explore design issues, recruitment processes, sample size, retention, choice of outcome measures, and the viability of a specified research design. Even programs that show promising outcome results may not be able to be implemented, rendering any potential benefits irrelevant. A thoroughly conducted feasibility study provides a solid foundation for future pilot and large-scale studies.

Study Overview

The purpose of this study is to develop and evaluate the feasibility of a novel curriculum enhancement program, Val's Alphabet House. The program provides a unique approach to instruction in foundational reading skills by embedding explicit alphabet and phonological knowledge instruction into a student driven language-rich context. This study examines the feasibility of implementing Val's Alphabet House using a mixed methods approach. Data from all outcome collections measures (i.e., classroom observations, semi-structured interviews, and feasibility surveys) will be coded in alignment with feasibility frameworks to identify determinants and facilitators to implementation (O'Donnell, 2008; Proctor et al., 2011). The systematic arrangement of theoretical and research-based foundation for this curriculum enhancement program optimizes the chances for successful implementation. The methods for this investigation are discussed in the next chapter.

Chapter 3: Methods

Study Context

To investigate fidelity and to better understand barriers and facilitators related to the curriculum enhancement (i.e., Val's Alphabet House), data was collected from educators across two settings in the Virginia Quality Birth to Age Five System (VQB5) including Virginia Preschool Initiative (VPI) with, mixed delivery settings during the 2024-2025 school year. Although both contexts provide positive experiences for students, the differences between them are essential for a comprehensive understanding of potential implementation settings. These sites receive a level of state funding to support high-quality early childhood experiences in birth-toage-five classrooms. The VPI classrooms (4 classrooms, 1 intervention setting) were housed within an elementary school and taught by a certified teacher supported by a full time paraprofessional. The mixed delivery classrooms (3 classrooms) were housed in independent centers and staffed with two or three educators in each room with various levels of education. These centers also operated year-round, as opposed to the VPI classrooms, which followed an academic calendar with typical school day hours (i.e., approximately 7 hours per day). Both the VPI and mixed delivery classrooms use the CLASS observation tool to provide feedback to educators twice a year from internal and external evaluators.

Participants and Setting

Prior to recruitment, approval was obtained from the University of Virginia Institutional Review Board (IRB) to ensure the participants were protected in accordance with all IRB procedures. All teacher names were kept confidential, and consent was obtained. All parents received notification that their child's classroom was participating in the study and that no student data would be collected.

Teachers

Thirteen educators representing 8 classrooms from Virginia Ready Region 9 (Virginia Early Childhood Foundation, 2025) participated in the study. The term "educator" includes any adult who had a role in implementing the program including classroom teachers, instructional assistants, and preschool special education student evaluator. Educators were eligible to participate in the study if they taught in a 3-year-old or 4-year-old preschool classroom within the VBQ5. Educator demographic information is provided in Table 1 (in Chapter 4).

Children

Depending on the location, the students' age range varied from three to five years old. Infants and toddlers were outside the scope of this study; at this stage in development, the program developed was intended for preschool age children. Enrollment in some programs required meeting specific criteria, such as household income, having an incarcerated parent, or the presence of an Individualized Education Program (IEP). Therefore, the population of students in each classroom represented a range of social economic status, academic and behavior strengths, and school readiness. No student data, including demographic information, was collected for this study.

Procedures

Curriculum Enhancement Design

In the current study, the feasibility, appropriateness, and acceptability of a languagefocused early literacy skills enhancement was examined across early childhood contexts. The enhancement program was designed to be curriculum agnostic and able to be used alongside any curricula already in place, as many preschool classrooms utilize a global curriculum (e.g. HighScopes, Creative Curriculum, STREAMIn3). Educators implemented the program at various times of day depending on the classroom schedule and to different group sizes (i.e., ranging from 1-on-1 to whole group). The program was implemented over a 9-week period, where eight-to-ten-minute lessons were implemented at least 3 days a week. A fourth optional day was also provided to teachers with all of the teachers teaching at least one of the optional lessons and most teachers teaching 6 or more of the 9 optional lessons.

After obtaining educator consent and notifying families, all students continued to participate in their regular early childhood daily program and receive Val's Alphabet House as a curriculum supplement. The program was developed based on the current research regarding evidence-based practices for the development of early literacy skills (e.g., alphabet knowledge and phonological awareness) with the objective of being (a) context and content agnostic, (b) easy to implement with minimum professional development required, and (c) facilitating of students' conversational language skills through the use of teacher facilitation and manipulatives. The program was designed following the recommendations of the Curriculum Research Framework (Clements 2007). Recognizing the importance of simultaneously building the foundation for later word reading and linguistic comprehension during the early childhood years, the program is situated in a language-rich experience based on the groundwork of the dialogic reading routine. New letters and sounds are introduced within the context of targeted conversation concepts aimed at building topical background knowledge, supporting breadth and depth of lexical knowledge, and encouraging purposeful, active listening.

A scope and sequence was initially developed, followed by an instructional routine that systematically builds foundational literacy skills. Materials were developed to support implementation including daily scripts and teacher and student manipulatives (i.e., letter sound cards, student letter cards). Two initial lessons were field tested by the research team to make any necessary adjustments prior to the feasibility study. From the field test, scripting language was adjusted, additional supports were built in the program- (e.g., directions for how to implement classroom routines such as *turn and talk*) and transition routines were added.

Val's Alphabet House incorporates instructional design principles based on characteristics of effective instruction for preschool students including integrated alphabet knowledge and phonological awareness (Lerner & Lonigan, 2016), within a dialogic conversation to enhance oral language by building topical background knowledge and developing breadth and depth of lexical knowledge (Pillinger, 2022) and, purposeful listening. Each routine followed guides for, systematic explicit instruction (Archer & Hughes, 2011), spaced practice opportunities (Agarwall, 2012), visual supports (Sinha, 2022), and cumulative practice (Mayfield & Chase, 2002). It is theorized that these components in conjunction with implementation practices of pacing, child talk, dosage, and preparation will lead to eventual improved student outcomes and teacher learning. However, the scope of this program is the focus of feasibility of implementation.

Figure 1

Val's Alphabet House Logic Model



Each lesson is formatted with a *Review*, *New*, and *Do* section. The *Review* portion of the lesson reviews the previous day's information (i.e., letter name, letter sound, vocabulary words). During the *New* portion of the lesson, the teacher explicitly introduces the new content (i.e., letter name, letter sounds, and conversation topic). The *Do* portion of the lesson provides opportunities for student practice, either individually or with a group, with teacher feedback. Appendix A provides an example of a daily lesson, program scope and sequence, and sample Day 4 story.

Curriculum Materials

All materials were designed to support teacher implementation with high fidelity and to decrease overall professional learning needed and teacher preparation time.

Teacher Guides

The Teacher Guides, or manuals, were designed to be visually appealing, easy to navigate, and include accessible readability of the text as well as accessibility assurances. All

lessons were sequenced in a binder with each daily lesson spanning two pages that when opened, read from the top to the bottom. There are plastic sleeve in the front of the binders that housed all the necessary materials such as sound letter cards, student letter cards, and phonological awareness tools (i.e. sound boxes for onset rime and individual phoneme blending). There is guidance of a soft script for use with students and a section designed for providing teacher notes, tips, and reminders.

Student Materials

Student materials were designed to support child engagement during lessons (e.g., alphabet chart and alphabet cards). One key aspect of the program is the use of visual supports. Broadly, visual supports may include gestures, pictures, multi-media, or realia. The use of visual supports may enrich the learning experience and support vocabulary development by providing real life context and promoting engagement with the content (Wasik & Bond, 2001).

Professional Development

Prior to implementing the curriculum enhancement program, teachers participated in a 1hour professional development session. This session included information about the theoretical underpinnings of each component of the program, demonstration, and facilitated discussion opportunities. Teachers also received all program materials and a timeline of the study.

One of the study's aims was to evaluate the ease of implementation with minimal professional development or coaching. Therefore, after the initial training session, teachers received two brief follow up videos via a link sent by email. These videos addressed two challenges observed during classroom observations, including the use of the story starters and support for oral language as well as how to support the phonological awareness portion with gestures (i.e. chin dropping for identifying syllables) and tools (i.e. sound boxes). The researcher

informally checked in with teachers throughout implementation at each observation session (three times over the course of the study) and offered to answer any questions the participant had at that moment.

Data Collection and Analysis

The use of qualitative and quantitative data obtained from educator interviews, classroom observations, and feasibility surveys were used to identify themes across all three data collection domains and to identify areas of agreement and disagreement between findings to gain a better understanding of the research questions (O'Cathain et al, 2010). When analyzed together, the data sets can help explain the *why* and *how* of the broad constructs of, feasibility, acceptability, and appropriateness. Each data source was analyzed separately and then triangulated at the analysis portion of the process in alignment with the feasibility framework.

Constructs and Measures

A 15-question survey was developed based on previous research to capture educator's perceptions of acceptability, feasibility, and appropriateness as well as educator demographic information. Lastly, a semi-structured interview protocol was developed to collect qualitative information to provide additional context and explanation. These constructs are further detailed in the upcoming sections. Figure 2 also provides an overview of constructs and measurements.

Figure 2

Construct	Element	Definition	Measurement	Analysis
Fidelity	Dosage	Amount of instruction provided (number, length, frequency)	Teacher Log	Calculation of number of lessons <u>taught</u> , average time of each lesson, & number of students present
	Adherence	Extent to which critical components are implemented as intended	Video Observation	Researcher created coding scheme (1 or 0) for is the indicator present or not. Additional descriptor assigned.
	Quality	Instructional delivery quality (using techniques, processes, or methods as intended)	Video Observation	Researcher created coding scheme that looks for pacing, organization, language facilitation & use of tools/gestures (3-point Likert Scale)
Implementation	Feasibility	Extent to which <u>a new</u> innovation can be successfully used or carried out	Interview & Survey	Interview questions – the matically coded Survey ~ 7 items on a 5-point Liker scale
	Appropriateness	Perception of fit, relevance or compatibility	Interview & Survey	Interview questions – thematically coded Survey ~ 7 items on a 4-point Liker scale
	Acceptability	Perception that a given innovation is agreeable, palatable, or satisfactory	Interview & Survey	Interview questions – the matically coded Survey \sim 7 items on a 4-point Liker scale

Study Constructs, Data Source, & Analysis

Sample Characteristics

Teacher level data was collected to describe the teacher participants in the sample. This included a brief demographic survey with items such as "How many years have you been teaching? and "What level of education do you possess? Collecting the teacher level demographic data provides important details about the participant sample.

Fidelity: Dosage, Adherence, and Quality

Fidelity is a broad term containing multiple components including adherence, quality, dosage, participant responsiveness, and program differentiation (Dane & Schneider, 1998). *Adherence* is the extent to which components of an intervention are implemented as intended. *Quality* of implementation describes qualitative aspects of implementation, such as pacing and lesson preparedness. *Dosage* is how much instruction was provided to students. Participant *responsiveness* is measured by capturing how students responded to an intervention (e.g. level of engagement). *Program differentiation* is the extent to which the intervention varies from another treatment or comparison condition. Research has shown that approximately 75% of studies report fidelity data and of those studies, the primary focus was on adherence and dosage (Dahl-Leonard et al., 2023).

Adherence

To evaluate the degree to which this program was implemented in the way it was intended, video observations of classrooms were conducted using a researcher-created fidelity measure observation checklist closely aligned with the enhancement program Prior research has utilized similar procedures to measure these elements, whereas a researcher creates a checklist that aligns with components of a lesson plan (Dahl-Leonard et al., 2023; Piasta et al., 2015; Pence et al., 2008) to use when coding observational videos. In this specific instance, the lesson plans were developed using visual icons that could align with the adherence checklist to help streamline the process of coding. The observation checklist focused on indicators of adherence and quality of implementation. The implementation checklist for adherence included determining if each component of the routine for the three sections (i.e. Review, Do, New) were completed or not by designating a 1 if present and a 0 if not present. Additionally, a categorical description was assigned to each binary score (1 or 0) which further explained the instructional move. For example, if a component was coded as a 0 (not evident), the description code could be "omitted," "altered," or "replaced." Furthermore, if a component was coded as a 1 (implemented), the available description codes were "created" or "implemented as written." The "created" descriptor indicated that the teacher did implement the component as intended but also added something additional to the component that still focused on the intended goal (e.g., found a letter on the alphabet chart as indicated by the lesson plan and then added a class singing of the ABCs). The

"implemented as written" descriptor was assigned to those components the participant executed just as written in the lesson plan.

Over the course of the nine weeks, three video observations were collected from each classroom. Some classrooms had the same educator lead all three recorded lessons, while others had a rotation of educators that led the lesson. Therefore, some classrooms have three recordings from the same educators while others have one or two recordings from one educator and then other recordings of a different educator. The analysis was conducted at the individual teacher level to avoid averaging across three different individuals to create a classroom score. Appendix B contains the complete code book with further details.

Quality

Quality of instruction refers to the elements of implementation beyond what is captured in the adherence checklist and refers to the manner in which the lesson is delivered (Dusenbury et al., 2005). Similar to past studies, quality was assessed using global, Likert-type items, whereas coders were given detailed descriptions of each level of quality and asked to determine an overall score for each subsection of the quality element (Hamre et al., 2010; Justice et al., 2009). In the current study, quality of each lesson was measured using four indicators (pacing, preparation/organization, language facilitation, and use of tools/gestures). These indicators were focused on teacher behavior and were grounded in prior research of teacher instructional quality including language interactions, the process of making abstract ideas concrete, and overall preparedness and pacing of lessons in the preschool space (Bruner et al., 1966; Hindman et al., 2022; Yoshikawa et al, 2013). Each quality indicator was coded on a 3-point Likert scale where a value of 3=high quality, 2=moderate quality, and 1=low quality. The coding measure also included a section for a written summary or important notes from the lesson to provide additional context to the scoring. Appendix 2 provides further details regarding the definitions, expectations, and coding guidance for each indicator.

For both adherence and quality, inter-observer reliability was established by co-viewing and independently rating lessons. Coders participated in a one-hour training delivered by the primary researcher. After training, the coders practiced coding different video sections together, watching a video together, coding independently, and discussing the results. Inter-observer agreement of 90% was established prior to independent coding. Percent agreement was calculated as the number of agreements divided by the total number of possible codes. 100% of observations were double-coded. Discrepancies in coding were resolved via discussion and consensus.

Dosage

Dosage of the program was also collected. Educators completed daily logs that reflected the lesson provided, the amount of time in minutes the lesson took to complete, and the number of students present for the lesson. The logs were created for a quick and easy completion to ensure limited demand on the participants. For example, an educator only needed to record: 3 in the lesson column, 15 for minutes, and 4 to indicate number of students. These were logged via paper/pencil recording and collected at the conclusion of the study.

Analyzing Data: Factors of Fidelity

To analyze adherence and quality, total possible points divided by received points multiplied by 100 resulted in a percentage for each teacher. Adherence and quality were calculated separately, resulting in an adherence score and a quality score. Adherence scores of less than 50% were considered "low" scores, whereas scores greater than 80% were considered "high," and scores in between (i.e. 50%-80%) were "medium" (Hill & Erikson, 2019). Analysis were conducted at the individual teacher level and not classroom level because some classrooms had three adults rotating turns of teaching the program. This structure resulted in some teachers being observed three times over the course of the program while others were only observed once. Further descriptive analyses were conducted to examine what an educator was most likely to do in the event of a 0 score for a particular domain (i.e., omit, alter, or replace). Researchers also examined how often a teacher was likely to receive the "create" designation, meaning the educator completed the lesson component but then added an additional piece (e.g., extra letter review, addition of a song). Observation data revealed potential topics for further exploration in the semi-structured interviews.

Data collected from teacher logs provided information about the number of lessons completed over the 9-week period. The data was analyzed descriptively revealing a range and average amount of time each educator spent delivering the lesson. The number of students who participated in the lesson (i.e. student number) was also analyzed descriptively to illustrate the range and average number of children in the group for each lesson.

Implementation: Feasibility, Acceptability, and Appropriateness

Procotor and colleagues define *acceptability* as the perception among the implementors that the given practice is agreeable, palatable, or satisfactory (2014). *Appropriateness* refers to the perceived fit of the practice to a given setting, provider, or consumer as well as the perceived fit of the practice to address a particular issue or problem. *Feasibility* is defined as the extent to which the practice can be successfully implemented within a given setting. All three constructs together provide a way to holistically evaluate a new practice. Weiner and colleagues developed valid and reliable measures of the three above-mentioned implementation outcomes useful for a wide range of implementation studies, including efficacy studies (2017).

Surveys

Following the implementation of the curriculum enhancement program, teachers anonymously answered survey items detailing their perceptions of the acceptability, appropriateness, and feasibility of the program. Teachers were presented with 15 items delivered via Qualtrics. These items were rated on a 4-point Likert scale that ranged from completely disagree to completely agree. The survey concluded with an open-ended item prompting the educators to share any additional feedback. See Appendix C to see the Teacher Feasibility Survey.

Interviews

At the conclusion of the innovation period, educators participated in semi-structured interviews. Semi-structured interviews provide a way to collect in-depth information about participants' experiences and perceptions. The semi-structured format allows predetermined questions to be asked of all participants but also the flexibility to ask follow-up or additional questions in response to the situation (Mirram & Tisdale, 2015). Interview questions probed several broad constructs including identifying determinants and facilitators of implementation. The interview questions were open-ended to allow for detailed answers to yield descriptive data (Mirram & Tisdale, 2015). Each interview took place via Zoom and lasted approximately 15 minutes. See Appendix C for more detailed information regarding interview questions.

Analyzing Data: Factors of Implementation

Data collected from the surveys were analyzed descriptively. The means and standard deviations were calculated for each group of five Lickert-scale items that related to each element (i.e., acceptability, feasibility, and appropriateness). This process helped to identify patterns and trends within the responses, providing information to inform the creation of the interview

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questions. Scales of this nature have been used in previous studies of implementation (Henry & Solari, 2020). Each main question was scripted with potential follow up probes available to use if necessary.

To analyze the information collected from teacher interviews, each interview was recorded, transcribed, and thematically coded using a mixed-methods software, Dedoose (version 9.2.22). Recording the interview ensured that each participant's complete interview was preserved for analysis. The transcripts from the interviews were transcribed verbatim with Zoom software and uploaded into Dedoose. Post-interaction reflections were completed immediately following each interview to reflect on emerging themes and patterns in the educators' responses and to refine the interview protocol.

Coding and analysis followed a multi-stage, iterative approach. The domains of acceptability, appropriateness, and feasibility guided the development and iterations of the codes. These domains are comprised of factors related to implementation. Two researchers trained on the coding process by coding several excerpts together to refine the coding scheme. Then they coded 20% of the transcripts, resolving differences and coming to consensus on codes and excerpt grain size to gain reliability with each other. Prior to coding independently, an inter-rater reliability score of at least .95 Cohen's Kappa (Cohen, 1960) was achieved using the Dedoose testing application. 100% of transcripts were double coded by the two trained researchers, and discussion was used to reach consensus on any discrepancies and to discuss emergent themes. Researchers used available Dedoose tools such as co-occurrence matrices, frequency charts, and code clouds to identify key themes around barriers of and facilitators to implementation and feasibility. The coding guide used in conjunction with Dedoose can be found in Appendix E.

The classroom observations, teacher interviews, and survey data are complementary methods that provide a comprehensive understanding of the factors affecting implementation of Val's Alphabet House. Classroom observations offer direct insights into how the curriculum is being applied in real-time. Teacher interviews provide qualitative data, revealing educators'' perspectives, experiences, and suggestions for improvements. Survey data quantifies broader trends and patterns across the group. Together these data pieces create a holistic picture that informs effective strategies for overcoming barriers to sustained program use.

Researcher Reflexivity and Role

This study incorporates daily logs, interviews, surveys, and classroom observations to gather comprehensive data on the use of a novel early literacy curriculum enhancement. Throughout the research, the researcher acknowledged positionality and the potential influence on data collection and interpretation. The primary researcher has a background in early literacy education which informs the approach to the research and to the program created. The primary researcher also acknowledges that the presence of a power dynamic as a white woman from an institute of higher education interviewing people of color working in early childhood settings can influence the information collected and impede the ability to purse more in-depth responses during semi-structured interviews. However, all researchers involved in the study aimed to create a collaborative and respectful environment with participants, ensuring that their perspectives were accurately represented. This reflexivity is crucial for producing credible and meaningful findings that can inform practice in early childhood education.

Chapter 4: Results

The purpose of this study was to examine the extent to which teachers could implement Val's Alphabet House given limited professional learning prior to beginning the program and to garner teachers' perceptions of feasibility, appropriateness, and acceptability of the program. This chapter organizes and reports on the study's main findings. First, participant demographic data are presented. Then fidelity of implementation is examined through classroom observation data. Next analysis of descriptive statistics of observation, survey, and interview data are examined in alignment with the acceptability, appropriateness and feasibility framework. Lastly, the convergence of data reveals barriers and facilitators associated with the program framed around the constructs of feasibility, acceptability, and appropriateness.

Recruitment and Retention

Recruitment began in August of 2024. Schools, centers, and home daycare settings from Ready Region 9 were approached to participate. Originally 19 teachers had agreed to be in the study. Two withdrew prior to officially consenting. One because the program was not going to work in her setting (i.e. hospital education setting), and one due to "too many classroom behavior demands." After consenting, three additional teachers withdrew; two left their jobs and one withdrew after her teaching partner left. None of these five participants began implementation; they withdrew either just before or just after the consenting process. Two home daycare settings were pursued but neither consented to participating. All participants who remained in the study received a \$100 digital gift card.

Participant characteristics are displayed in Table 1. The sample for this study consisted of 13 educators working in VBQ5 preschool settings. Educators worked in 3- and 4-year-old preschool rooms with 8 teachers (61%) in 3-year-old settings, 4 educators (33%) in 4- year-old

settings, and 1 teacher (6%) in an Early Childhood Special Education (ECSE) setting. The thirteen educators represented eight classrooms. Three classrooms were mixed delivery settings, four were Virginia Preschool Initiative (VPI) settings, and one was an intervention setting housed in a public elementary school.

Table 1

Demographic Characteristics	N = 12
Education level	
High school diploma or GED	33% (4)
Some college, but no degree	17% (2)
Bachelor's degree	33% (4)
Graduate or professional degree	17% (2)
Race	
White	58% (7)
Black or African American	42% (5)
American Indian or Alaskan	8% (1)
Native	~ /
Asian	8% (1)
Age	
18-24 years old	17% (2)
35-44 years old	25% (3)
45-54 years old	17% (2)
55-64 years old	42% (5)
Years of Teaching Experience	
Less than 3	8% (1)
3-5 years	25% (3)
5-10 years	17% (2)
10-20 years	17% (2)
20+ years	33% (4)
How many years in current position?	
Less than 6 months	17% (2)
1-3 years	33% (4)
3-5 years	17% (2)
More than 10 years	33% (4)

Demographic Characteristics of Participants

Note. One participant did not return the survey so 12 out of 13 educators are represented

Fidelity of Implementation

Research question number one aims to answer how well teachers are able to implement a novel curriculum enhancement, Val's Alphabet House, with fidelity and limited professional development prior to beginning the program. Implementation was measured by collecting data on dosage (i.e., how many lessons teachers taught over the course of the program) and through classroom observations.

Dosage

Educators were expected to teach Val's Alphabet House three times per week for nine weeks. Each lesson was expected to take between 8-10 minutes. There was an optional fourth day lesson and an optional review week educators could choose to use. The average implementation dosage was 31 sessions (range, 27-35) out of 36 possible sessions. The average lesson time based on the observation videos was 9:39 (range, 5:27 to 16:31) out of the suggested 10-12 minutes per lesson. Overall, educators were able to implement the routine at least 3 times a week within a reasonable timeframe. Past studies have shown that dosage can vary widely in authentic teacher delivered settings (Goldstein et al., 2017; Marti et al., 2018; Piasta et al., 2015).

Adherence and Quality

Data from observation demonstrated that educators' adherence ranged widely from 8%-100% on activity steps. Table 2 provides details of individual educator adherence percentages. Educators in VPI settings tended to have higher levels of implementation (i.e., 100%, 92%, 75%) than educators from mixed delivery settings (i.e., 34%, 25%, 67%). Overall, 3 educators had average high implementation (i.e., above 80%), 3 teachers had mid implementation (i.e., 50%-80%), and 7 educators had low levels of implementation (below 50%). Adherence was also calculated for each individual section of the routine (i.e., *Review, New, Do*) with the non-content domains (i.e. opening songs, transition chants, and closing songs) removed. Implementation of the *New* section (i.e. introduction of letter and sound) had slightly higher adherence than the *Review* (i.e. review of past letter names, letter sounds, and phonological awareness skill) section and both the *New* and *Review* sections were higher than the *Do* sections (i.e. children sorting). This could be related to the number of materials needed for each section. The *Do* portion of the lesson requires the use of individual letter cards which teachers reported being difficult to keep organized.

To compliment the binary coding system of 1 "implemented" and 0 "not implemented" an additional descriptor code was also assigned. Additional analyses were conducted of these descriptor codes to examine what educators did when they received a 0 (not implemented with fidelity) for a component. Table 3 provides details of this analysis. With respect to times when teachers did not implement a component, they were most likely to omit the component. For example, out of 16 coded 0s for the letter sort review activity, 14 were assigned the "omitted" code while only 2 were assigned the "altered the task" code. There were a few instances where educators would alter the task (i.e. change the focus from the intended focus) instead, as in the example of *ABC review* and *oral language*. In this case, instead of using the letter sound cards to review the previous lesson, teachers would review all the letters or use a different material. Analysis of the oral language component revealed, teachers most often defined the word for students and moved on without engaging them in conversation using the story starter.

Lastly, a more global look was given to total times individual lesson components were observed across all teachers. This broad sweep was used to identify if any one element was significantly observed more than the rest. The "lesson opener" and "letter introduction" were observed the most (i.e., 23 out of 27 opportunities) while the "transition chant" (i.e., 9 out of 27 opportunities) and both review activities (i.e., 11 out of 27 opportunities) were observed the least. Table 4 has additional details.

Table 2

Adherence and Quality

Participant ID	Age of Classroom	Observation Number	Total Adherence (%) (out of 12)	Total Quality (%)	Adherence Review (content only 2 elements)	Adherence New (content only 4 elements)	Adherence Do (content only 3 elements)
1**	3-year-olds	1	75% (9)	83	50	75	67
		2	100% (12)	92	100	75	100
		3	92 (11)	92	50	75	100
2**	3-year-olds	1	34 (4)	33	50	50	0
		2	34 (4)	33	0	50	0
		3	42 (5)	33	50	50	0
3**	3-year-olds	1	59 (7)	67	50	100	0
		2	50 (6)	75	50	75	0
		3	75 (9)	92	100	100	33
4**	4-year-olds	1	92 (11)	100	100	100	100
		2	92 (11)	100	100	75	100
		3	75 (9)	83	50	75	100
5**	4-year-olds	1	67 (8)	75	100	75	67
		2	83 (10)	100	100	100	100
		3	67 (8)	100	100	100	67
6**	4-year-olds	1	100 (12)	100	100	100	100
		2	100 (12)	100	100	100	100
		3	100 (12)	100	100	100	100

7.1*	3-year-olds	1	25 (3)	33	50	25	0
	_	2	34 (4)	33	50	25	33
7.2*	_	1	8 (1)	33	0	0	0
8.1*	3-year-olds	1	34 (4)	67	0	50	33
8.2*	_	1	8 (1)	50	0	25	0
8.3*	_	1	17 (2)	42	0	25	33
10.1*	4-year-olds	1	67 (8)	75	50	50	100
10.2*	_	1	33 (3)	42	50	25	0
10.3*	_	1	25 (3)	42	50	25	0
Total Across Participants		27	59 (7)	69	59	64	49

*Denotes mixed delivery setting **Denotes VPI setting

Table 3

Component	Total	Omitted	Altered the	Replaced the
Not	Number of		task	task
Implemented	0			
Review PA	16	14	1	1
Review ABC	7	2	5	0
PA Intro	11	11	0	0
Oral Language	12	6	6	0
Letter Intro	4	2	2	0
Alpha Chart	11	11	0	0
Sort Intro	11	7	3	1
Sort Check	14	13	1	0
Letter Review	16	14	2	0

Further Explanation of Non-implemented Components

Note. 0 indicates component was not implemented as intended
Table 4

Instructional Component	Number of Times Observed		
	(out of 27 opportunities)		
Lesson Opener	23		
PA Review	11		
ABC Review	20		
PA Intro	16		
Oral Language	15		
Transition Chant	9		
Letter Intro	23		
Alpha Chart	16		
Sort Intro	16		
Sort Check	13		
Letter Review	11		
Closing	17		

Total Observed Incidence of Each Component Across Total Observations

Considering quality of delivery, educators with higher levels of implementation (e.g., 92%) had higher quality scores (e.g., 100%), whereas those with low levels of implementation (e.g., 34%) had lower quality scores (e.g., 33%). There was substantial variability in quality scores across the domains of pacing, use of tools and gestures, language facilitation, and organization. However, no discernable pattern emerged.

Acceptability, Feasibility, and Appropriateness

Survey data and teacher interview data provided information regarding teacher's perceptions of the acceptability, feasibility, and appropriateness of the program.

Survey Analyses

To answer research question one, educators completed a 15-item survey adapted from Wiener and colleague's (2017) Acceptability of Intervention Measure (AIM), Intervention Appropriateness Measure (IAM), and Feasibility of Intervention Measure (FIM). The survey measured three constructs: feasibility, appropriateness, and acceptability. Cronbach's alpha was calculated for each dimension with acceptability measuring at 0.78, appropriateness at 0.92, and feasibility at 0.90. The survey was administered online using the Qualtrics platform during the month of January following the completion of program implementation. The survey included a Likert scale and open-ended items prompting the educators to provide additional feedback on the program and program materials. Educators were also asked to provide demographic data (age, gender, race), information on their teaching experiences (years of teaching experiences, current job, years at current job), and educational background (bachelor's degree, some college, high school). Items were on a 4-point Likert scale with 1 representing "completely disagree", 2 "disagree", 3 "agree," and 4 representing completely agree. The survey return rate was 92% or 12 out of 13. The anonymous completion meant researchers were unable to determine who did not complete the survey.

Means, standards deviation and range are reported in Table 5. Overall, educators reported high levels of acceptability, appropriateness, and feasibility by scoring items such as "I welcome the use of this program," "The literacy skills targeted in the program are important," and "The program seems possible" as highly agreeable. See Table 5 for further item details.

Table 5

Survey Responses

Item	Mean	Std. dev.	Min	Max
This program meets my approval.	3.25	.866	1	4
This program is appealing.	3.25	.866	1	4
I like this program.	3.50	.905	1	4
I welcome the use of this program.	3.75	.452	3	4
I talked to other people I worked with about this program.	3.58	.515	3	4
This program seems suitable for my students.	3.25	.754	2	4
This program seems applicable to my students.	3.33	.651	2	4
This program seems like a good match for my students.	3.41	.669	2	4
The activities were appropriate for my students.	3.33	.651	2	4
The literacy skills targeted in the program are important.	3.75	.452	3	4
This program seems possible.	3.58	.515	3	4
This program seems doable.	3.58	.515	3	4
This program seems easy to use.	3.50	.522	3	4
This program fits into my day	3.58	.515	3	4
easily with my other activities.				
The materials were easy to use.	3.41	.515	3	4

Teacher Interviews

The data from the teacher interviews provides additional context to the results of the survey. For example, unsurprisingly teachers' reports of acceptability of the program cooccurred with student acceptability in the interviews and reinforces the mean score of the first five survey items focused on teacher acceptability. See Table 6.

Table 6

Acceptability

Survey Data	Interview Data		
Teacher Acceptability	Student Acceptability	Teacher Acceptability	
This program meets my approval. (M=3.25, SD=	"Oh, they absolutely loved it. If there was a day that we hadn't	"I thought it was great."	
0.87)	done it yet, they'd ask why."	"I actually really liked it."	
This program is appealing. (M=3.25, SD=0.87)	"My kids were very engaged in it."	"I'll start by saying, I really love Val's House."	
I like this program. (M=3.50, SD 0.90)	"They knew Itchy, the dog! It was very cute. They were excited about it."	"I think I would love to be able to try this again."	
I welcome the use of this program $(M=3.75)$			
SD=0.52)			

Note. Student acceptability is reported by teachers.

Data from the teacher logs and observation videos demonstrate that teachers provided the lessons in small group, whole group and one-on-one settings. Over the course of the 9 weeks, teachers did not change the group size structure they began the program with. Many teachers reported that all children benefited from the program, as in the example below:

I think it's a really really great tool to learn. Instead of just me sitting up there with a letter A on a piece of paper saying what letter is this, what is the sound that it makes..being able to incorporate different things for them to be engaged and really wanting to know what's happening next, what letter are we learning next, and I wonder what item is going to be next. It really kept the kids engaged.

However, some teachers also reported thinking the program was appropriate for certain subgroups of students. For example, one teacher reported, "...especially for kids who are learning English, you know. I think it was helpful for them to learn the new vocabulary." Another teacher reported, "I do think it was really easy and helpful to use with my student who has a disability because it was a really concrete way to focus on letter knowledge and letter sound knowledge." These statements help explain why some teachers feel the program was a good fit for their students.

Based on the survey results some teachers also indicated that they felt the program was feasible to implement; mean score of 3.58 for "the program seems doable" and "the program seems possible." Interview data corroborated this finding with teachers reporting statements such as, "In the beginning I wasn't very confident, but then, after a while, I could keep doing it." But other participants made recommendations related to feasibility such as, "I feel like if they were a little more simplified, not necessarily simplified, but a like a little shorter, it would have made it a little easier." Recommendations such as the previous one imply that feasibility was challenging for some, as confirmed with the observational data.

Interview data also suggests that some teachers adapted the materials to better suit their needs and the needs of their students. For example, one participant reported, "I had to tweak it a little bit and put it in my own, what made sense to me." Another participant responded, "If I didn't have like a lesson in my head for how I wanted to like, you know, like relay the story, it was really easy to just look at it [the lesson plan] and say, yeah, let's do this." This response indicates that the participant was creating their own lesson plan first and using the teacher guide as a consultation tool when needed. Although survey and interview data support many teachers having positive perceptions of acceptability, feasibility, and appropriateness, classroom observation data reveals challenges existed with implementation (e.g., 7 out of 13 educators had low implementation).

Given the wide range of implementation, observation summary statements, open-ended survey responses, interview responses, and post interview reflections were critical to providing additional context to the variability and low levels of implementation. Semi-structured interview results are presented next in 2 categories: barriers to, and facilitators of implementation of Val's Alphabet House.

Barriers

Managing materials

The curriculum enhancement program has materials associated with it including letter sound cards, individual letter cards, objects (i.e. 3 per week), and the house. While the majority of teachers reported liking the overall premise of the house with objects, several commented that the organization and management of the materials made implementation difficult. For example, one participant stated, "I don't like all the stuff you gotta pull out; like the individual stuff, like all the letters and all that. That was a lot." Another participant agreed that "It was a lot of materials." Teachers provided recommendations to address the materials issue including putting the alphabet cards on a ring as well as storing the individual letter cards in an index box.

The teacher's manual was also identified as a barrier. Some educators commented on the script while others did not feel the layout of the page supported the delivery of the lesson. Although several educators commented on the teacher manual this particular statement encapsulates many of the sentiments, "...I didn't like all the steps, the little boxes, and sometimes I felt like when I was for the day, it was just very confusing. I didn't know really what to do or where to start first. Like I knew where to start, but it was just very time consuming." Again, educators provided recommendations to address this barrier. For example, some made suggestions about formatting the pages differently or providing a QRI code to scan and watch brief videos to get additional information about lesson delivery.

Preparation

Although the program was developed with the intention to require little to no preparation, some teachers reported feeling unprepared to teach a lesson by not reading them ahead of time. For example, one participant stated,

I felt like it was a challenge to try to juggle the different parts of it and keep it organized as I was trying to read, because I didn't have a good grasp of it to start with. If I were to do it over again, I would spend more time prepping for the lesson before the lesson.

Several participants reported feeling nervous about "getting it wrong" or reading the script incorrectly even though participants were told they did not have to read the scrip verbatim if that was uncomfortable. One participant stated,

I would get nervous sometimes and forget my lines, and then I would get lost and have to look at the paper to see what was to be next, and in that timeframe, of course they are acting out so for me,...getting more versed in it, so that is runs a little smoother, and then

I'm more confident for myself.

The lack of feeling prepared could also be tied to not having a clear idea of what the routine looks like or a well-developed understanding of why certain elements of the routines are important. One participant noted that it would have been helpful to see different examples of how the routine looked in classrooms while another participant reported that their confidence in teaching the program came from seeing it modeled for them. Modeling lessons were an option offered to all teachers if they requested it; only one teacher requested the modeling during the 9week implementation period of the study. This also supports a need for more examples prior to implementation.

Language Support

Val's Alphabet House can be broken down into two focus domains: (1) alphabet knowledge in conjunction with phonological awareness and (2) oral language. Research often defines alphabet knowledge and phonological awareness as constrained skills that children will typically master during the early years of schooling. These two skills do not develop naturally and require instruction in order for students to obtain understanding. Oral language, and the underlying subskills that overlap with it (i.e., vocabulary, semantics, syntax), are unconstrained skills that students will develop over a lifetime. These unconstrained skills can be difficult for educators to support in the classroom as there is less concrete evidence of attainment, a need for a deep understanding of how to foster language development in the classroom, and a belief that child talk is important and should take priority.

Although the oral language component was not the weakest element (i.e., 16 observed instances), it was the element with the most alterations (i.e., out of 12 0s, 6 were labeled "alter the task"). Often when engaging students in the oral language component of the routine, the teacher would provide a student friendly definition of the daily object (i.e., the object introduced in conjunction with the daily letter name and letter sound and added to the house) but would fail to engage the students in back-and-forth conversational exchanges. The struggle with the oral language component of this program was articulated in relation to the comfort level of teaching the other skills. When asked to articulate the goals of the program at the conclusion of the study, most participants said something about learning letter sounds despite being told the goals included alphabet knowledge, phonological awareness, and oral language at the beginning of the

study. For example, one participant responded that "...to have them link letters with their sounds" was the goal of Val's Alphabet House. Furthermore, several participants reported difficulty implementing the oral language component of the program. For example, one participant reported, "That was the only thing...how do I keep that imaginary story going? Like, that was the most difficult part of it."

Facilitating Student Participation

Despite reported high levels of appropriateness for students (M range 3.25 - 3.41), teachers struggled to implement the section of the lesson where students were most likely to actively participate (i.e., the sorting task). The sorting task is written as a time when each student receives letter cards, and they sort them into letters that match the focus letter of the day and those that do not. There are student letter cards and large alphabet cards for this activity. Across all settings this section had the lowest implementation fidelity (i.e., 49%) and across mixed delivery settings, there was even more of an absence of this component. This is a time of less teacher control and possibly teachers felt more uncomfortable in this situation. Additionally, the section of the lesson requires the most materials, and managing materials was identified as a barrier to successful implementation.

Facilitators

Compatibility with Scheduling

Teachers reported the program fit into their days with the other activities (M 3.58). Several participants corroborated this survey result by indicating "it just fits our schedule very well." Participants reported including the program as part of work time, circle time, or pockets of time that before were underutilized. For example, one participant said, "We had a time right at the end of the day, a 20-minute time between rest time and dismissal, so it was perfect to plug it in..." Other participants indicated that the program was compatible with other programs they already had in place. The programs' flexibility allowed teachers to implement when they felt was best and could deliver it in the manner they saw fit (i.e. small group, whole, group, one-on-).

Compatibility with Content and Student Development

Across the three- and four-year-old classrooms, many educators reported that the content – as they described it, learning letters and sounds – was a good fit. For example, one participant stated, "Everything I thought was just right on cue for our little 3-year-olds." However, again, educators were unlikely to name oral language as a specific content domain of the program with only one educator naming vocabulary development when asked to articulate the goals of the program. Across classrooms, the three-year-old educators were also the most likely to have lower levels of implementation as they were "adapting" or "adjusting" the program to meet their needs. For example, one participant reported, "...at the same time I put a different spin on the story if I didn't think that they would understand it completely, so that it was easier for them to follow along."

Structure and Routine

Although observation data and survey data suggest that some teachers struggled to implement the program with fidelity especially in the beginning, others commented that the structure was helpful to them and the students. Each lesson was structured the say way every day to provide predictability for the teacher and students. Interview data suggests that the "repetition was extremely helpful" and that they "were glad that the routine and structures were there." Classroom observation data shows that while across the three observations, each classroom's total fidelity did not change, the total quality score increased or remained high. Even though participants appreciated the predictable lesson routine, data revealed mixed results from educators. While overall educators seemed to perceive the program as feasible, appealing and acceptable for their classrooms, their ability to implement the program with fidelity varied widely. Interview data reinforced the educators' positive feelings toward the program and relayed perceived high levels of student engagement as well. However, their inability to accurately reflect the goals of the program during the interview and the implementation struggles with particular sections of the lesson indicate that adjustments are needed.

High Student Interest in the Objects

One key element to the oral language component of Val's Alphabet House are the objects or items that are introduced each day to the content of the house and narrative. These items corresponded to the daily letter name, letter sound, and phonological focus of the day. The items serve to drive the ongoing narrative and enhance student engagement into the routine. Although a small number of educators (3 out of 13) voiced hesitation over some of the item choice for example, "…only thing that I did not like about it, which is that some of the pictures [objects] did not to me match. You know, what the kids are used to seeing." Many educators echoed the students' excitement over the items. The excitement over new objects and curiosity over what could come next seemed to propel their enthusiasm and willingness to participate in the routine each day. For example, it was reported that,

"They really got excited every time we said, "Let's get out Val, and see what she's up to!" They were also really good about remembering what we had talked about previously because it exited them. I think that's what kept them interested in it a lot." On average educators reported finding the program acceptable, appropriate, and feasible to implement into their given context. However, rates of implementation fidelity varied widely across classrooms with some educators finding high levels of success while others striving to identify and implement the most crucial core components. Importantly, educators not only reported high levels of acceptability for themselves, but for their students as well suggesting that there is value to further examining the implementation of the routine. Additionally, the barriers identified (i.e. managing materials and preparation) are related to the modality, frequency, and duration of support offered during the initial implementation of the routine and therefore can likely be addressed in future iterations.

Chapter 5: Discussion

This chapter discusses and synthesizes the results of the study's research questions and literature review. The major findings are discussed as they relate to previous curricula implementation studies in the preschool space. Limitations of the study are outlined including limitations pertaining to sample size and representation, contextual information, and sustainability. Lastly, implications and future research are presented.

Review of the Study

The purpose of this study was to develop and examine the feasibility of a novel foundational literacy skills curriculum. The curriculum was designed out of a need for an easy to implement, low cost, brief routine that explicitly and systematically exposes children to letter names, letter sounds, and phonological awareness tasks within an ongoing, student-centered narrative. The program was designed for three- and four-year-old children and situated in a familiar context to make the abstractness of letter sounds as concrete as possible. Assessing feasibility in tandem with the development process supports the identification of barriers and facilitators to implementation that can be later addressed in future iterations. In the case of Val's Alphabet House several barriers and facilitators to implementation were found. Most participants found the program enjoyable and easy to implement within their current context. Additionally, they reported seeing the value of the focus skills addressed in the routine and high levels of engagement from the students across classrooms. However, the oral language components and sorting tasks were difficult for teachers to implement with fidelity, and they struggled to manage the materials associated with the routine. Teachers who reported having background knowledge and experiences with the focused constructs (i.e., alphabet knowledge and phonological awareness) had higher levels of fidelity. Therefore, to ensure higher levels of fidelity across

settings, more professional learning prior to implementation was needed. Additionally, this study attempted to provide more information into the instructional decisions teachers were making within the program. These findings may help provide more details about why specific elements of curricula are not implemented.

Fidelity of Implementation

Curriculum Elements

The first aim of this study was to examine implementation fidelity of the program. Research supports higher levels of fidelity resulting in higher outcomes for children. The overall design and format of the curriculum can serve as either a barrier or facilitator to implementation. Teachers in the preschool space have a range of experiences, background knowledge, and education levels. Finding a balance between providing enough built-in teacher support while maintaining an accessible useability level is crucial for teacher uptake.

Content

It is not well understood the ways in which learning activities situated within a curriculum contribute to its effectiveness (Bierman, 2021; Nesbitt & Farran, 2021). The quality and sequence of activities may directly impact children's acquisition of skills. This study began to undercover some of the reasons behind teachers not implementing an activity within the curriculum by considering whether they omitted a component, altered the task by changing the intended goal, completed what was written and added to it, or completed the task as it was written. Examining the differences in these instructional decisions is important because some change the intended goal (e.g., omitting and altering) while the other descriptors (e.g., completed as written and created) do not change the intended goal and may enhance the element. Findings from this study reveal that, overall, many components were omitted as opposed to altered.

Omitting a component could show a lack of understanding of the role that component plays in the overall instructional routine, or it could reveal underdeveloped skills that prevent the teachers from engaging the students in the task. Both situations reveal the need for additional training prior to and/or during implementation. Examining fidelity with these descriptors allowed for the capturing of positive changes that can be incorporated into future iterations.

Teacher Script to Support Implementation

Commonly, preschool curricula offer instructions for each activity. Additionally, some programs include scripting or information on what the teacher should say when conducting and activity (Weiland et al., 2018). Val's Alphabet House includes detailed scripting for teachers to use for planning purposes or for in-the-moment support when delivering instruction. Several sections of script are used for transitions and are less impactful on content, such as "Let's see what we are going to add to Val's house today?" Other portions of the script are directly tied to the delivery of content, as in "Lunch begins with the /Ill/ sound. The /Ill/ sound is spelled with the letter LL." Succinct instructional explanations are important when explicitly teaching content for reducing the cognitive load required to understand the information (Sweller & Chandler, 1991). Although the scripting of language was designed to help alleviate some of the cognitive load needed to implement the lesson, some participants reported being overwhelmed by the script. This warrants review of the script to examine ways the verbiage, structure, or format of the script could be adjusted to make it more of a support for all teachers. Overall readability is one area that necessitates future exploration.

Supporting the Simultaneous Teaching of Constrained and Unconstrained Skills

Research has repeatedly reported that children need instruction in both word learning and linguistic comprehension skills from the onset of school (Lonigan, 2003; National Early Literacy

Panel [NELP], 2008; Schatschneider et al., 2008). Additionally, while language develops naturally, teachers can support and develop children's oral language in the classroom through intentional practices (Bond & Wasik, 2009; Phillips et al., 2018). While comparatively teachers may spend more time on literacy tasks than other tasks during the day, the quality of instruction in those areas continues to be an area of growth for many teachers. Becoming more efficient with instruction in constrained skills (e.g., letter names and letter sounds) could free up time for teachers to devote to other areas of instruction. Additionally, it's important to recognize that developing one skill or domain does not have to come at the expense of another. Teachers can engage children in phonological awareness tasks while continuing to foster their linguistic comprehension and oral language growth.

However, writing supports into a curriculum for a teacher is difficult. Determining the most effective types and formats of support for teachers to promote skills in children, particularly unconstrained skills, is even more challenging. While some lend themselves well to scripting or "teacher tips" (e.g., student-friendly definition of a vocabulary word or providing open-ended questions), others are less defined and delineated (e.g., how to structure back and forth conversation exchanges) and therefore prove more difficult to leverage built-in teacher supports and succinctly explain instructional moves within the teacher materials. Nonetheless, this is an important area to continue to investigate, as finding effective ways to support teachers in promoting both constrained and unconstrained skills is crucial for comprehensive early childhood education.

Support for Planning and Professional Learning

Studies have shown that high-quality professional learning can lead to improved child outcomes and greater job satisfaction for teachers (National Association for Education of Young Children). Professional learning for preschool teachers, especially in relation to a new curriculum, is crucial as it equips them with the strategies and teaching methods that enhance their ability to successfully implement the program. Additionally, some research has suggested that teacher materials (e.g. teacher manual for a program) could potentially support teacher learning (Davis & Krajcik, 2005). Meaning, in an ideal scenario, the teacher materials would incorporate educative elements that through learning how to teach the program and delivering the program, teachers would increase their knowledge of the content and pedagogical practices. However, in the early childhood space, determining what supports to include in a program either through the program materials and additional real time professional learning, can be challenging.

Often teachers do not have built-in planning time or any additional time outside of their working hours to devote themselves to professional learning. Some have proposed the use of asynchronous models to accompanying materials, but it is difficult to ensure teachers receive all pertinent information when participating in online modules or other forms of asynchronous work.

The content of curriculum training is also crucial to successful implementation. Teachers must understand not only the *what* and *how* of a program but the *why* as well. This depth of understanding helps to ensure that when teachers are making instructional decisions within the curriculum, they know which components are critical and which have more flexibility. They know where and when to adapt a lesson or activity without jeopardizing the integrity of the program.

Teacher's Perceptions of Acceptability, Appropriateness, Feasibility

Research supports the importance of teacher buy-in for the successful implementation of educational programs (Clayback et al., 2022). The results from the teacher survey on the

acceptability, appropriateness, and feasibility were mostly linked with the sentiments echoed in the teacher interviews. This study's findings reinforced that teachers were willing to see the program through completion and continue to work on implementation even when they encountered challenges because they felt the program was well suited for their students, focused on valuable skills, and fit into their context. When teachers are committed to implementing a program, it can lead to more consistent and effective use of the program. Understanding and addressing these perceptions can lead to higher levels of teacher buy-in, ultimately contributing to the program's success and positive outcomes. Furthermore, although seemingly a small inconsequential finding, teachers reported enjoying implementing the program as they appreciated the premise of the program and the joy it brought their students. In a climate where teachers often feel stressed and are leaving jobs in early education (e.g., Bryant et al., 2023; Souto-Manning & Melvin, 2022), this particular finding warrants consideration.

Limitations

There are several limitations in this study that should be addressed in future studies. Although all teachers reported being able to implement the program within their day, rigorous documentation of what business as usual looked like at each site did not occur. Researchers were able to glean information about what constitutes a typical day through classroom observations and teacher interviews, but future studies should examine the role these existing practices play in successful implementation. This could include collecting information on other curricula used throughout the day, what a typical daily schedule looks like, and information on other literacy practices in place (e.g., read alouds, writing opportunities, and center activities). Collecting this type of information could shed light on the factors contributing to varying levels of implementation across different classrooms.

Val's Alphabet House was designed to be a 9-week program that could be repeated at the educator's discretion. Several educators reported wanting to repeat the program or implement extensions of the program that they created to fit the instructional needs of the class (e.g., create alphabet books, play center games, include the house at choice time, etc.). Sustained implementation of practices and transfer of routines from Val's House to other parts of the day (e.g., extend and recast skills) should be examined to help determine what elements educators seem most likely to continue to use.

Given that the survey was anonymous, the data received from it could not be linked to the data from the observations and interviews. This decision was intentionally made to allow teachers to provide honest feedback on the program without fear of judgement from the researchers, leading to more accurate and valuable insights into areas of improvement. However, further studies may want to consider collecting survey data from each participant in a way that allows the triangulation of the three data sources. This triangulation could lead to areas of divergence in data from participants which could reveal more nuanced understandings of the feasibility of implementation. For example, exploring the connection between a teacher's education level and their implementation practices, as well as considering their years of experience in their current role, could help reveal factors that facilitate successful program implementation.

One barrier that emerged during the interview process and in the responses to the openended survey questions was the materials included with the program. Student materials (e.g., letter cards) were most likely to be named as a barrier. However, other materials, such as the teacher manual could be further explored in greater detail during future interview processes. For example, examining how teachers interact with the teacher manual – such as which sections they focus on, how they navigate the pages, and the specific details they prioritize – could inform better formatting and provide more effective real-time support for teachers.

Implications for Practice

Examining all data sets, these results suggest a misalignment between teachers' implementation and their perceptions of the program. Across grade levels and contexts, teachers reported high levels of acceptability, appropriateness, and feasibility and yet many had observed difficulty with implementation. This suggests that refinements to the program and associated professional learning are warranted. However, it is important to note that one of the aims of this study was to determine if teachers could implement the program with limited initial and ongoing professional development and instead rely on the educative features of the written curriculum. Given previous research on the effectiveness of one-day training and the lack of research on the impact of educative features in curricula materials, these findings are not surprising (Garet et al., 2001; Neuman et al., 2015). Future studies can examine ways to improve the initial training and curricula materials. These findings offer several practical insights into overcoming implementation barriers.

Strengthening Educators' Efforts to Develop Student's Language Skills

Dosage for this program was three lessons per week for nine weeks, with the option of providing a fourth lesson that incorporated a written narrative story. All participants choose to implement the optional fourth day lesson at least once over the duration of the study. Additionally, several participants mentioned the stories in interviews as favorable tasks or as planning support for the other oral language components. Interestingly, teachers appeared more comfortable engaging students in language tasks centered around a written story than fostering a student-driven oral narrative. Meaning teachers were willing to read a story to students and ask the corresponding open-ended questions but often omitted or altered the component of the routine that was more free-form storytelling.

Research undoubtedly demonstrates the value of high-quality read alouds in the classroom (Wasik & Hindman, 2020). Shared reading experiences allows for rich oral language instruction, open-ended questions with back-and-forth conversation exchanges, and the opportunity to intentionally build background knowledge of a topic or theme. However, there is merit to exploring oral language instructional practices that occur during teacher-directed times outside the confines of a written text. When conversations transpire outside of a written text, the teacher can focus on conversation exchanges and moving the story forward without fixating on students getting the "correct answer" or comprehending the plot of the story; rather the emphasis can be on oral language elements such as vocabulary, sentence complexity, and syntax. When the topic of conversation has an anchor (e.g., the "Story Starter" in Val's Alphabet House) teachers can ask open-ended questions and use prompts to drive the conversation in a way that results in a comprehensible story. Without the preoccupation of ensuring text comprehension, teachers may be more able to focus more on eliciting back-and-forth conversations.

Another important aspect of teacher-guided oral language experiences beyond book reading is the opportunity it creates for teacher involvement. As previously mentioned, early childhood educators come from diverse backgrounds and experiences, which means some may feel more comfortable with whole-group book reading, while others may be more reserved. This approach allows teachers who are hesitant to engage in read-aloud practices to still promote oral language development in the classroom. Additionally, it provides a space for translanguaging, enabling multilingual students and teachers to use their full linguistic repertoire to express themselves. This can enhance comprehension, engagement, and academic performance.

Teacher Buy-In

Involving teachers in initial iterations of programs can quickly highlight barriers and facilitators to implementation and lead to better final products and, hopefully, improved implementation fidelity prior to assessing student effects. This initial step could help in future studies by eliminating program factors that may hinder student outcomes and instead allow a focus on what conditions and for whom the program is working.

This program cultivated immediate teacher buy-in assumingly linked to children's enthusiasm about the program. This led to high levels of dosage and a willingness to see the program through completion. Teachers who withdrew from the study all withdrew for reasons aside from the program itself (e.g., losing partner teacher, setting, etc.). Most excitingly, several participants reported wanting to stay involved with any future research if possible. Sentiments such as this are important for research practice partnerships and for the health of the community. This finding serves as a reminder that student and teacher buy-in to a program is critical to its ongoing success and curricula creators must strive to design engaging, effective, and inclusive educational experiences.

Creative Ways to Engage in Professional Learning

The findings from this study showed participants struggled to implement the program with fidelity, especially in settings where educators were less likely to have a four-year education degree or background professional learning experiences in the targeted area (i.e., foundational early literacy skills such as alphabet knowledge, phonological awareness, and oral language). In these cases especially, the initial one-hour training and brief follow-up videos were not enough to support implementation. These settings were also the most difficult to arrange professional learning. Teachers in these settings did not have regular planning time or anytime built into their schedule without children. These scheduling constraints make it difficult to provide meaningful professional learning. For example, in one instance, a training session was delivered to teachers via zoom watched from their phone in the dark room where their children were napping. More research is needed to determine flexible ways to deliver initial and ongoing support to teachers in more constrained environments. Additionally, these professional learning sessions need to be accessible to a wide range of educators with and without background knowledge of the topic at hand.

Future Research on Val's Alphabet House

Results from the study's findings highlighted several areas that need improvement to support fidelity of implementation of future iterations of the program. These necessary changes can be categorized into two main areas: modifications to the program design and content, enhancements to the professional development provided to teachers. Lastly, considerations for future research on the program will be outlined.

Changes to the Program

Several barriers identified by participants revolved around the organization of the materials involved with the program. Primarily, the focus was on the student letter cards and object organization within the structure (i.e., the house). More efficiency and ease of access to the program materials could lead to more teacher use. Teachers recommended storing the student letter cards in alphabetized boxes as opposed to individual bags and keeping the letter sound cards on a ring. The addition of those two materials (i.e., storage boxes and rings) would add a nominal price increase to the program while greatly increasing the possibility of the materials begin applied.

The format of each lesson plan follows the same instructional routine for days one through three. Each component of the routine is marked with an icon to indicate which foundation skill (i.e. alphabet knowledge, phonological knowledge, oral language) is the section focus. However, several participants reported getting "lost" in the daily lesson plan: either with the language of the scripting or because they had not internalized the instructional routine. To combat this problem, an instructional routine "cheat sheet" was recommended. The "cheat sheet" would be a simple outline of the instructional routine without the activities and scripting present. This support could be on a small card that could lay near the teacher and serve as a reminder of the order of components.

Changes to Professional Learning

Most barriers that were identified could be linked to a lack of knowledge: understanding of the value of a component in the program (e.g., oral language) and why it was included, or how a certain instructional routine should look when implemented. Although one goal of the program was for teachers to be able to implement with limited professional learning, additional professional learning or revised professional learning is warranted in future iterations. Ensuring teachers understand the why and how of each component could help teachers make decisions within the confines of the program for their specific students and context without losing the integrity of the program or the essential parts. Due to the restrictive nature of some preschool contexts, lack of time being the most prevalent, future studies should explore the most feasible and effective way to engage teachers in professional learning.

Additionally, research has identified benefits and limitations of educative curriculum, or curriculum that is intended to support teacher learning as well as student learning (Krajcik, 2017). Val's Alphabet House could serve more as an educative curriculum if adjustments to the

materials were made. This would involve examining teachers' practices in using the curriculum to determine which parts they were attending to, and which were not as helpful.

Added Measures of Student Outcomes and Scalability

Feasibility studies are commonly used before efficacy studies to determine whether an intervention can be implemented by the intended user in the intended spaces. Following a successful study that leads to impactful revisions, determining for whom the program works and under what conditions is a logical next step. Future studies should explore the impact of Val's Alphabet House on student learning particularly in the areas of alphabet knowledge, phonological awareness, and oral language. Additionally, teachers' ability to transfer skills (e.g., oral language prompting and scaffolding) to other areas of the day should be explored.

Conclusion

In conclusion, this feasibility study has provided valuable insights into Val's Alphabet House, highlighting both its strengths and areas for improvement. Moreover, beyond the feasibility of the approach, this study demonstrates the methodological value of using mixed methods to evaluate an educational program. The inclusion of qualitative data enables detailed, first-hand reporting of teachers' experiences at this critical stage in development. The findings suggest that, while the program shows promise in achieving its intended outcomes, there are specific aspects that require refinement to enhance its feasibility for teachers across preschool settings to support more successful implementation. Key recommendations include incorporating more targeted supports for teachers and refining the instructional materials to better address specific components. By addressing these areas, Val's Alphabet House can be better positioned to meet the needs of teachers, ultimately contributing to more successful implementation. Future research should continue to explore these improvements and assess their impact on the program's overall efficacy.

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Curriculum Materials: Program Scope and Sequence

10-week program (option for 2nd cycle); 4 times a week; 10-12 minutes per day

Week	Letters	PA Focus	Words
1	B, N, S	C.W words/syllables	backpack, nightlight, suitcase
2	M, A, T	C.W words/syllables	muffin, apple, toaster
3	O, R, C	onset/rime	on/off, rug, couch
4	L, E, Q	onset/rime	lamp, egg, quilt
5	F, G, D	phoneme	fan, gate, desk
6	K, V, I	phoneme	kite, vase, Itchy (the dog)
7	J, U, X	C.W words/syllables	jacket, umbrella, xbox
8	W, Y, Z	onset/rime	web, yam, zone
9	Н, Р	phoneme	hose, pail
10	Review	Review	performance tasks
Cycle 2 Week	Letters	PA Focus	Words
1			
2			
3			

Curriculum Materials: Sample Lesson Plan



Curriculum Materials: Sample Lesson Plan



Curriculum Materials: Day 4 Sample Story

Val had a best friend who wasn't like any other friend. It was a fluffy, waggy-tailed dog named **Itchy**.

One sunny morning, Val and **Itchy** decided to go on an adventure. They packed a basket filled with yummy snacks and a colorful **kite**. With the wind whispering through the trees, they skipped along, eager to explore.

Their first stop was the park, where they spotted kids flying **kites** high in the sky. Val's eyes sparkled with excitement as they unfurled their own **kite**. With a whoosh, the **kite** danced in the air, soaring like a bird.

After a fun-filled time at the park, Val and **Itchy** strolled through the town. They passed by a little shop with a window full of shiny **vases**. Val admired the beautiful **vases**, each one unique and dazzling.

Suddenly, they heard a loud crash! Itchy had accidentally bumped into a table, knocking over a **vase**. Val's heart raced with worry, but the shopkeeper smiled kindly and assured them it was okay. They apologized and helped cleaned up the mess.

Val and **Itchy** made their way back home. When they got home, Val hugged **Itchy** tightly. "Today was the best day ever," Val said with a smile. And with a wag of **Itchy's** tail, they knew there would be many more adventures to come.

Appendix B Fidelity Coding Guide

General information:

You will code for fidelity using recorded videos of teachers implementing the activities in the curriculum. Prior to coding, have all your materials easily accessible, including the video, coding guide, and coding sheet. As you watch the video of the teacher implementing the activity, you will code their adherence to the activity steps and three quality indicators (i.e., pacing, use of tools & gestures, teacher language facilitation, preparation) for each activity. You will also write a short summary of the activity.

Coding guidance:

Adherence is about whether the teacher implements the component. Each component corresponds to an icon on the lesson plan. The component will be coded as **1** (**implemented**) or **0** (**not implemented**). If a 0 (not implemented) is recorded, a note indicating reason will be marked (e.g., omitted, replaced the task, altered the task)

Omitted: Teacher did not do the component and did not do anything else in it's place Replaced the task: Teacher did another task from the routine in place of the component (i.e. reordering of components)

Modified the task: Teacher changed the task in some way that changes the intended focus Created: Teacher did the component as written AND added an additional piece (i.e. sang the alphabet song, etc.)

The following adaptations fall within the acceptable range:

Task direction alterations that keep the intention of the original directions (i.e. "*This is the letter B*. *The letter B says /b/...for...* "*The name of this letter is B. The letter B spells the /b/ sound.*"

<u>Logistical or routine alterations</u> (i.e. "One at a time, put your letter in the basket when it is your turn...for... "everyone come up and put your letter in the basket when I say go")

<u>Ordering alterations</u> (i.e. letter review is written as say the letter, show the alphabet card, find it on the alphabet chart and the teacher starts with finding it on the alphabet chart, saying the sound, and showing the alphabet card.)

Quality indicators focus on how well the teacher is implementing the activity. Below is a definition and the expectations for each indicator. Each indicator will be coded as **3** (high quality), **2** (moderate quality), or **1** (low quality). See the table below for further coding guidance.

- Use of tools and gestures: This is how well the teacher uses the tools and gestures outlined in the routine. Tools include sound boxes for onset/rime and phoneme level work, alphabet card, alphabet chart, and letter cards. Gestures include modeling chin dropping during syllable work. Teachers should utilize the tools and gestures when indicated in the routine.
- **Pacing:** This is how well the teacher uses the instructional time. The teacher should keep a brisk pace but allow sufficient time for the students to respond. There should be little time when the students are not actively involved in the activity (i.e., time devoted to behavior management or non-instructional activities should be minimal).
- Preparation/Organization: This is how well prepared and organized the teacher appears. The teacher should appear to be familiar with the routine format and materials. The teacher should have all materials organized and accessible when needed.
- Language facilitation: This is how well the teacher facilitates and responds to the conversation portion of the routines. Teachers should use the "story starters" and extend

or recast children's responses. *Extend* builds on a child's message by adding more information or explanation. *Recast* is restructuring a child's message back to them in a way that makes it grammatically and syntactically correct.

	3 (High)	2 (Moderate)	1 (Low)
Use of Tools	All four tools (alphabet	Some tools or gestures are	Tools and/or gestures
and Gestures	card, alphabet chart, letter	used (around 50%).	are rarely or never used
	cards, PA support (i.e.		(less than 50%).
	sound boxes or hand		
	gestures) are used at least		
	once at the appropriate		
	time.		
Pacing	Good pacing, with little or	Adequate pacing, with	The pacing was too slow
	no down time and not	some down time or	or too rushed.
	rushed. Each component is	somewhat rushed.	
	in close alignment with the		
	recommended time.		
Preparation /	Well prepared and	Adequately prepared and	Did not appear prepared
Organization	organized, with few or no	organized, but with some	or organized.
	lapses.	lapses.	
Language	Teacher uses the "story	Teacher does not use the	Teacher does not use the
Facilitation	starter" or equivalent open-	"story starter" or open-	"story starter" or any
	ended question(s), defines	ended question(s),	open-ended question(s),
	or elaborates on the new	minimally defines the	does not define the new

vocabulary (i.e. item),	new vocabulary (i.e.	vocabulary (i.e. item),
recasts/extends/repeats	item), responds to child	limited to no child talk
what children say when	responses with positive	occurs.
responding, has an obvious	affirmations most of the	
structure for students to	time (e.g. "yes" or "ok")	
talk (e.g. turn and talk,	majority of time, children	
whole class discussion	do talk, but obvious	
procedures.)	structures are not present.	

Summary: Write 1-3 sentences about your overall impression of the routine. This summary may be more subjective than the other coding. Please include here anything that stood out about the routine.

- It is okay to include information that is already captured in the adherence and quality sections
- We are *most* interested in information that is not already documented
- If there is anything you notice related to the adaptations, please be sure to note it here.

Appendix C

Teacher Feasibility Survey

(Adapted from Weiner et al., 2017)

Items	Completely	Disagree	Agree	Completely
	Disagree			Agree
This program meets my approval.				
This program is appealing.				
I like this program.				
I welcome the use of this program.				
I talked to other people I worked with about this program.				
This program seems suitable for my students.				
This program seems applicable to my students.				
This program seems like a good match for my students.				
The activities were appropriate for my students.				
The literacy skills targeted in the program are important.				
This program seems possible.				
This program seems doable.				
This program seems easy to use.				
This program fits into my day easily with my other activities.				
The materials were easy to use.				

Blue=Acceptability Green = Appropriateness Purple=Feasibility

What other additional information would you like to provide?

Appendix D

Interview Guide

Opening Statement:

The purpose of this study is to gather information about using Val's Alphabet House in your classroom. I am hoping to better understand what makes the program easy or hard to use in your opinion. You will be given a pseudonym, as will the school/center, in any writing others view. You may refuse to answer any question and may stop the interview at any time. Do you have any questions before we get started? Feel free to stop me at any point if you need clarification, more information, or time.

1. Tell me your thoughts about using Val's Alphabet House.

a. What do you like about using the program?

b. What challenges did you encounter? How did you address them?

- 2. In your own words, can you articulate the goals of the program?
 - *a. How confident did you feel providing each part of the program to your students?*
 - a. What made you feel that way?
- 3. Was Val's Alphabet House practical for you to implement in your classroom? (Why or why not?)
 - a. Were you able to complete the majority of lessons each week (i.e., at least three days a week)? (Why or why not?)
 - b. Were you able to complete the activities in the expected amount of time (i.e., 10-12 minutes)? (Why or why not?)
 - c. How many students did you typically use the program with?
 - *d.* How did the children respond to Val's House? Were there any unexpected reactions or feedback?
 - 4. Will you continue to use Val's House in the future? In what ways?
 - 5. What are the next steps or recommendations for improving Val's Alphabet House based on the initial implementation experience?

Follow-up Question Stems to Keep in Mind

- Can you say more about that?
- *Can you give an example?*
- Can you elaborate on your use of the word....

Member Checking Questions:

• I want to make sure I am understanding what you are saying. Can I stop and give a summary at this point? Please stop me at any point if I am off base.

- What I hear you saying is..
- Is it okay if I stop here and repeat what I have heard you say so far?

Closing: Thanks for taking the time to talk with me today. If you want to see any of the work that comes from this, please let me know and I will be happy to share it.

Appendix E

Interview Transcript Coding Guide

Research Questions:

To what extent are preschool teachers able to implement a newly developed curriculum enhancement with fidelity?

To what extent do preschool teachers perceive a newly developed curriculum enhancement as appropriate and feasible to integrate into their existing context and with their current teaching practices and routines?

(a.) What do teachers perceive as the barriers and facilitators of the

implementation of a newly developed curriculum enhancement?

Coding Reminders:

- Grain size
 - Excerpts include the whole question and follow up response.
 - If the researcher asks a clarifying question, include that question and the follow up response in the initial excerpt.
 - If the researcher asks a follow-up question and the response is on a different topic from the original question and answer, create a new excerpt.
 - If the research restates the same question, do not start a new excerpt.
 - The important thing is that the answer should include the context of the focus question.
- Always code at the lowest level possible. This may be the parent code or a child/grandchild code.
- Keep track of coding questions by creating a memo attached to the excerpt in question.
- Do not code introductions or conclusion statements.
- All talk regarding dosage, timing, and group size can be coded together unless the participant is speaking about something not related to those three elements.

Code	Definition	Example
APPROPRIATENESS	Statements about perception of	"Everything I thought was just right
	fit, relevance, or compatibility	on cue for our little three-year- olds."
CONTENT	Statements about general content	"Overall the content of the program seemed on par."
Oral Language	Statements about supporting student language including vocabulary	"but to also increase vocabulary and knowledge."
Letter Sounds	Statements about teaching letter sounds and/or engaging in letter sound tasks	"The goal of the program is to introduce children to letter sounds"

Letter Names	Statements about teaching letter	"They really got into the letter
	names and/or engaging in letter	names."
	name tasks	
Phonological Awareness	Statements about teaching	" recognizing the beginning
	phonological awareness and/or	sounds."
	engaging in phonological	
	awareness tasks NOT including	
	letter sounds (e.g. syllables,	
	onset rime, phoneme blending)	
FEASIBILITY	Statements about the extent to	"like that was the most difficult
	which a new innovation can be	part."
	carried out	
ACCEPTABILITY	Statements about the perception	"it was good to have something
	that a given innovation is	different than what we did"
	agreeable, palatable, or	
	satisfactory	
Student Acceptability	Statements about children liking	"my kid, they really like it."
	the innovation	
Teacher Acceptability	Statements about teachers liking	"I actually really like it."
	the innovation	
MATERIALS	Statements about the program	"And the materials were there."
	materials as a whole	
Objects	Statements about the daily items	"They really got into the objects and
		characters."
House	Statements about the actual	"They like the house. I would leave
	structure	it open"
ABC cards	Statements about the student	"Maybe more organized and not
	letter cards and/or the sound	everything in one bag, like for the
	spelling cards	letters."
Other Materials	Statements about other aspects of	"The guide was very easy to
	the program (e.g. teacher	follow."
	manual, lesson plans, binder,	
	script, page layout, etc.)	
Stories	Statements about the Day 4	"I liked that it came with a story."
	Stories included with the	
	program. NOT the ongoing child	
	created narrative about Val.	
PACING	Statements about the overall	"I think it was really beneficial time
	pacing of the program. Could	wise, like the pacing of it."
	include statements about daily	
	pacing, individual activity	
	pacing, or more holistically.	
RECOMMENDATIONS	Statements about changes to the	"Definitely change the house. It was
	program for future iterations	hard to keep that box together."
ROUTINES	Statements about the daily	"It was very helpful that the routine
	routines in general.	and structure was there."

Songs/Chants	Statements about the use of the	"I found they really like the alphabet
	opening song, closing routine,	clap"
	letter chant, etc.	
Letter Introduction	Statements about introducing a	"I wasn't used to saying things like
	new letter to students	that when I teach a new letter."
Item Introduction	Statements about introducing a	"I don't know if they made the
	new item to students	connection when I first showed them
		the item, but they liked putting them
		in the house."
Sorting	Statements about the sorting task	"She really loved the sorting"
	(e.g. introducing the task,	
	sorting, reviewing, etc.)	