Implementing Synthetic Phonics in Malaysian English as a Second Language (ESL) Primary School: An Analysis of Pedagogical Practices and Classroom Realities

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DOI: https://doi.org/10.47772/IJRISS.2026.1026EDU0220

Received: 08 April 2026; Accepted: 14 April 2026; Published: 08 May 2026

ABSTRACT

Synthetic Phonics (SP) in early reading development was well established and was strongly advocated by the Rose Review of England, as it stated how synthetic phonics offers the best passage to become a skilled reader. In the Malaysian context, there is a lack of in-depth understanding of how it is being implemented in classroom settings, particularly teachers' pedagogical practices in teaching English as a Second Language (ESL) and students' points of view on this approach. This qualitative study was designed to address the experiences and practices of Malaysian primary school teachers and corresponding perceptions of students from Standard 1 and 2 regarding the implementation of SP through the teachings of blending and segmenting. Data were collected through semi-structured interviews from both teachers and students and analyzed using thematic analysis. Though various effective pedagogical practices for teaching the approach of SP could be identified, a gap between their practices and the realities in the classroom was discovered. The gap is driven by issues of class size and students' lack of prior exposure to the language. This paper consequently concludes that effective implementation of successful blending and segmenting pedagogical practices in phonics teaching is best achieved through collaboration of teachers, education leaders, and policymakers.

Keywords: Synthetic Phonics, Blending, Segmenting, Pedagogical Practices, Early Reading.

INTRODUCTION

The Importance of Early Literacy and Phonics

Early literacy is the foundational skill that empowers a child to become a lifelong learner and strives toward future academic success. In Malaysia, teaching and learning English as a second language is an important component of literacy. The methodology employed by teachers in primary education has often centered around the use of phonics instructions versus whole language approaches. Whole language approaches focus on teaching of the four main language skills which are listening, speaking, reading, and writing, presented at the same time with language components such as grammar and vocabulary, in a complete, integrated, meaningful, and real or authentic situation (Saputra et al., 2021).

However, previous studies have argued that due to the complexity of the English language system, phonics strategy helps students to understand the written symbols better as they make connections between sound and letter symbols (Chandra & Chand 2024; Liang & Fryer 2024). Phonics-based instruction is a bottom-up model that emphasizes the written text, where reading is driven by a process of making meaning from part to whole. Through phonics, readers construct meaning from words, phrases, clauses, and sentences as they process the text from phonemic units that represent lexical meaning and build towards meaning in a linear manner. Fluent students may not need to decode and sound out the words, as they are able to read and comprehend with speed and accuracy, beginning readers on the other hand, may not be able to do so, which will result in falling into

the struggling reader category, which will then affect their reading accuracy and comprehension (Taylor et al., 2017).

Within this approach, Synthetic Phonics (SP) has emerged as one of the methods of instruction. 'Synthetic' phonics refers to 'synthesize,' the process where beginning readers are taught grapheme-phoneme and blending phonemes for each word right from the outset in order to develop students' phonemic awareness (e.g., /c/-/a/-/t/ → "cat"). Phonics approach uses terms such as blend (merging individual sounds), segment (breaking a word into its individual sounds), phonemes (smallest unit of sound in a spoken language), and graphemes (written symbol(s) that represent that sound). They are also taught to reverse the process by segmenting a word into constituent phonemes (Glazzard, 2017). This method was strongly advocated by the Rose Review in England, as it stated how synthetic phonics should be the prime approach to decode and to become a skilled reader (Bradbury & Wyse, 2025). This evidence-based advocacy has influenced global educational policy, establishing SP as research-based method to overcome students' reading difficulties and equip them with the necessary literacy skills.

Blending and Segmenting in Malaysian curriculum

Malaysia's curriculum has undergone a change in 2011 when the Kurikulum Standard Sekolah Rendah (KSSR) was implemented and revised in 2017. This document differs from the 2011 KSSR as it is CEFR-aligned. Common European Framework of Reference for Languages (CEFR) is a globally benchmarked curriculum with a specific "linguistic" or "communicative competence" approach. It aims to produce balanced, creative, critical, and innovative students by integrating communication, science and technology, physical and aesthetic development, personal skills, humanity, and spirituality.

The Malaysian Ministry of Education (MOE) has integrated Synthetic Phonics (SP) in the 2017 CEFR-aligned KSSR with the aim of building a good foundation of language skills among students as they learn how to decode words, read, and build their penmanship skills. SP is mandated in the curriculum through specific Content Standard and Learning Standards of the reading skill.

This study aims to specifically zooms into the teaching of decoding skills, namely blending and segmenting as the foundational skills of SP and as part of the requirement of the KSSR curriculum. Blending occurs when individual phonemes are brought together in an effort to sound out a word making it possible for word recognition and the reading process (Glazzard & Stokoe, 2017). Webber et al. (2024) describe good instructions for teaching blending to the learners to sound out in phases until they can blend effectively and utter recognizable words. Segmentation, on the other hand, is viewed as the process of dividing the whole word into discrete phonemes, a skill that is also important for spelling, or encoding (Flynn et al., 2023). Dussling (2018) believes that both segmenting and blending proficiency are crucial for early readers to decode unfamiliar words when they read and encode them adequately in order to spell them, therefore, the two processes are two sides of the same coin in English literacy development.

Previously, traditional instructions relied heavily on rote memorization, where students were taught to memorize sight words rather than sounds through phonics approaches. Although doing so helps students with their fluency, comprehension, and confidence in reading, students may struggle to decode new and bigger words as they appear (Mulder, 2018). In contrast, the SP approach requires teachers to teach grapheme-phoneme and equip students with skills to decode words independently. As a result, students' ability to read expanded as they were able to recognize the sounds and decode the word themselves rather than waiting for the teacher to tell them what the word is. This shift calls for teacher development to bridge the gap between national policy and classroom realities.

In order to help teachers with this change, the MOE has implemented various initiatives to help teachers expand their capabilities in teaching SP. The MOE integrates phonics into every textbook, such as the CEFR-aligned Superminds textbook. The Superminds textbook comes with a teacher's guide that offers lesson plans and methodologies to help guide teachers in teaching SP (Kementerian Pendidikan Malaysia, 2017). The MOE also includes knowledge and skills in teacher training institutions as one of the courses for TESL teacher trainees in teaching early reading skills and vocabulary, encompassing phonics instruction to give early

exposure to future teachers in Malaysia. This comprehensive support system reflects the ministry's efforts in achieving English language proficiency for all students in Malaysia.

Problem Statement

English literacy is the foundation of reading proficiency. English literacy is crucial for students to gain knowledge and input as they encounter increasingly complex reading materials and progress through their academic years. The Ministry of Education (MOE) has integrated Synthetic Phonics (SP) as part of an important component in the KSSR curriculum as an effort to improve students' English literacy. The ministry has also provided ample resources and support such as, through the CEFR textbooks, the Content and Learning standards established in the DSKP (Dokumen Standard Kurikulum dan Pentaksiran) KSSR as guidelines and also revised the curriculum for teachers in teacher training institutions.

However, clear guidelines do not necessarily lead to effective classroom practice. Teachers are active interpreters of the curriculum, and their implementation relies heavily on their understanding and belief in SP and the contextual constraints exist in their classrooms such as class size and diverse students' needs. There has been limited research done on teachers' understanding and teaching practices in teaching phonics, specifically on SP. As teachers are the ones responsible for putting policy into practice, it is crucial to take their perspectives into account in order for the curriculum objectives to be achieved. Teachers possess unique pedagogical perspectives and have designed their own unique approaches to teaching based on their knowledge and experiences (Borg, 2019; Zhong & Kang, 2021). Hence, it is crucial to explore teachers' pedagogical strategies in implementing SP based on their points of view.

While understanding teachers' points of view is crucial, it is also important to explore students' experiences as an indicator for pedagogical effectiveness. Students' points of view provide two sides of the educational dynamics, allowing policymakers and teachers to identify the best pedagogical strategies and curriculum reforms needed for future improvements.

Therefore, a critical problem exists. While the implementation of phonics, specifically SP, in Malaysia is well-established, there is a lack of in-depth understanding of how it is being implemented in classroom settings, particularly looking into teachers' pedagogical practices and students' points of view. There is insufficient research that investigates:

1. The pedagogical practices that teachers employ in teaching decoding such as blending and segmenting
2. Teachers' understanding of the core principles of SP and how this understanding affects the implementation of decoding.
3. Students' experiences with the implementation of blending and segmenting skills, especially on how SP affects their early reading abilities.

By addressing this gap, this study will be able to address the experiences and practices of Malaysian primary school teachers and the corresponding perceptions of students from Standard 1 and 2 on the implementation of SP through the teachings of blending and segmenting.

Objectives

This study aims to achieve the following objectives:

1. To identify the instructional strategies teachers, employ to implement the decoding sub-skills of blending and segmenting in their Synthetic Phonics lessons.
2. To identify the challenges teachers, encounter in developing students' blending and segmenting abilities during Synthetic Phonics instruction for Year 1 and Year 2 students.
3. To examine the perceptions of teachers and students on the impact of blending and segmenting instructions on the students' reading development.

LITERATURE REVIEW

The Simple View of Reading: The Foundation for Decoding

Development of reading skill has been a focus of an enormous amount of theoretical writing. The Simple View of Reading (SVR) theory is one of the strongest models explaining this and, to some extent, accounts for the core aspects of reading development, such as decoding and sub-skills of decoding, such as blending and segmenting. It underpins the specific focus of the current study.

The R = D X C Model

Proposed by Gough and Tunmer (1986), the Simple View of Reading (SVR) states that the ability to attain meaning from printed text (Reading-R) depends on both the ability to understand the language in which the text is written (Comprehension-C) and the ability to identify the written words (Decode-D) of that language (Hoover, 2023). This is represented by the formula R = D x C.

According to Hoover (2023), there are three key ideas of this model. The first one is reading comprehension itself, which is the ability to derive both literal and inferential meaning represented in print. The second one is language comprehension, which refers to the ability to understand and construct meaning represented in speech. The third one is word recognition, which is the ability to accurately and efficiently identify printed words to access their stored meanings in the mental lexicon. This model captures the idea that both D and C are crucial for the success of R. If a child is able to recognize words but unable to comprehend, reading is not possible. Whereas if the child is able to comprehend but cannot recognize words, reading is also not possible.

The SVR has gained substantial support over the decades. Studies have shown that while both fluent word recognition and linguistic comprehension significantly influence early reading comprehension, the role of language comprehension escalates in its importance for reading comprehension in later school years (Lonigan, Burgess, & Schatschneider, 2018). In Gough and Tunmer's original formulation of the SVR, they placed particular emphasis on decoding, in response to whole language approaches that were widely used at the time. This has helped them to establish the foundational prerequisites for reading, such as phonological awareness and letter knowledge, which are vital in helping to identify students that face reading difficulties. The focus of SVR has evolved to where researchers are placing greater attention to language comprehension and its underlying components (Catts, 2018).

Within this theory, reading comprehension is the ultimate goal. However, this goal depends entirely on the child's ability to decode. The model portrays that if decoding ability is zero, reading comprehension will also be zero, regardless of the student's linguistic comprehension skills. A child would not be able to extract meaning from text they cannot read. Therefore, decoding is a valuable skill that is essential in allowing linguistic comprehension to be applied to the written word. This theoretical imperative is what justifies the Malaysian Ministry of Education's emphasis on phonics specifically synthetic phonics: blending and segmenting.

Wren's (2000) Cognitive Foundations of Learning to Read Framework

Another significant alternative to the SVR is Wren's (2000) Cognitive Foundations of Learning to Read framework, developed by the U.S. Department of Education under the Southwest Educational Development Laboratory (SEDL) project. This model was designed to guide instructional practice and prevent reading difficulty by synthesizing cognitive studies on reading acquisition. The model distinguishes between reading and learning-to-read processes by organizing cognitive development into domains that build up towards reading proficiency.

Even though Wren's model shares the same underlying key ideas as the SVR, which is that reading proficiency depends on comprehension and decoding ability, it offers more detailed explanations on the cognitive domains that are involved in the process. Wren's model breaks reading development into separate domains that encourage language comprehension and decoding abilities, ultimately leading to improved reading

comprehension. In this review, the decoding domain will be highlighted, as it is directly related to the current research focus on synthetic phonics instruction, particularly the teaching of blending and segmenting as part of the decoding ability.

Wren's framework defines decoding as the process of reading the letters or graphemes in print and transferring them into sounds or phonemes, which occurs through identifying the words involving cipher and lexical knowledge. Cipher knowledge can be defined as the ability to read and pronounce regular words. Lexical knowledge, on the other hand, is the understanding of words, meanings, and how they are used in a language. Both types of knowledge allow a child to decode correctly, which helps them to build their foundation of reading (Mohd Shafee, 2019).

Wren's (2000) Cognitive Foundations of Learning to Read framework also elaborates on the basis of cipher and lexical knowledge to decode by including phonological awareness, letter knowledge and phonics, and word recognition. Simultaneously, this framework elaborates further on linguistic comprehension, which encompasses subskills such as background knowledge, vocabulary, and verbal reasoning. Wren views all of these components as interrelated, and a weakness in one skill may affect the whole reading process.

Decoding: Blending and Segmenting

Another fundamental linguistic skill other than cipher and lexical knowledge is phoneme awareness. Phonemic awareness is the ability to hear, differentiate, and work with the individual sounds (phonemes) of words. It relies on an understanding that words are not single units but consist of smaller parts of sound that alter a word's meaning. Developing this sensitivity to the sound structure of language is an essential step that children must achieve before they can learn to read print (Carruth & Bustos, 2019). According to Carruth and Bustos (2019), basic phonemic awareness skills include:

1. word comparison (long vs. short)
2. rhyming (hearing and producing rhymes)
3. syllables (blend and segment)
4. onset-rime blending and segmenting
5. blending and segmenting individual phonemes
6. phoneme deletion and manipulation

While phonemic awareness encompasses a range of skills, blending and segmenting are crucial for decoding. An example of decoding is when a child sees the written word stop. They first segment it visually into its four individual letters: s - t - o - p. Next, they retrieve the most common sound (phoneme) associated with each letter:

1. The letter "s" makes the sound /s/.
2. The letter "t" makes the sound /t/.
3. The letter "o" makes the sound /o/.
4. The letter p makes the sound /p/.

Finally, they blend this sequence of sounds together smoothly: "/s/ ... /t/ ... /o/ ... /p/." By saying them together quickly, they arrive at the correct pronunciation: "stop."

The process of "decoding" requires the knowledge of the speech sounds in words and the alphabetic system, which are represented in print (Sparks, 2021). A study by Geva and Farnia (2012) found that decoding (D) and

linguistic comprehension (LC) contributed to reading comprehension for both English native speakers and second language learners. However, for early readers, decoding is the most critical skill, as being able to sound out the words is the most important first step. For native English speakers, their language comprehension develops earlier depending on their environment, whereas for second-language learners, it will probably take a longer time, as they need to rely on their decoding skill. Hence, this study shows the need for decoding skills, especially for early readers among Standard 1 and 2 students.

While the theory of SVR and Wren's framework successfully established decoding as a foundation of reading comprehension, the construct of "decoding" itself remains vague in terms of instructional practices. "Decoding" must be deconstructed into teachable sub-skills that can be observed, implemented, and measured in classrooms. According to a study by Ghana Education Service (2024), to read effectively, we must be able to decode words by separating word into individual sounds and then blending those sounds back together. In order to read and write effectively, early readers also need to be able to segment spoken words into their distinct sounds and map each sound to the correct letter. Mastering the subskills of blending and segmenting is crucial for developing the reading and writing skills. This study shows how instruction on getting early readers to segment and blend sounds enables them to sound out unknown words and translate letters to sound.

Synthetic Phonics

The Core Principle of Synthetic Phonics

Wolf (2018) describes the phonics approach as an approach that helps children in understanding the basic elements underlying the alphabetic principle. This approach shifts the emphasis to systematic rules of connecting letters to sounds. In 2005, Johnston and Watson published a study on T*he Effects of Synthetic Phonics Teaching on Reading and Spelling Attainment (2005),* which discovered how the children demonstrated improved reading and spelling abilities through the teaching of Synthetic Phonics (SP) ahead of the children's expected level. Following this study, the findings of the *Independent Review of the Teaching of Early Reading* by Rose in 2006 fully embraced the bottom-up approach to reading instruction, which is the Synthetic Phonics (SP) approach. The 2006 Rose Review was a catalyst for the current spotlight on SP in reading policies. Hence, SP is believed to be the best way of teaching early readers to read through decoding, segmenting, and blending known and unknown words (Medwell et al., 2017)

According to Jolliffe et al. (2022), systematic synthetic phonics is taught in a systematic progression by synthesizing or blending sounds to read words or segment words into sounds. This is a 'part-to-whole' approach, as children are taught to decode words by sounding out letters and blending or synthesizing them together. The systematic synthetic phonics approach is enforced by the Government of England due to some advantages, one of the advantages is enabling readers to apply sound correspondences in early reading and writing. SP also provides opportunities for early readers to progress without relying on visual memory. Furthermore, SP can also be taught using multisensory teaching materials and has been shown to produce better results according to research done on SP.

One of the core principles of SP includes explicit and direct instructions of grapheme-phoneme correspondences and skills like blending, which are directly taught to early readers rather than letting them discover incidentally (ILA, 2019; Johnson, 2016). The instructions follow a systematic and progressive sequence from simple to complex, beginning with individual sounds, progressing to blending sounds into words, and finally to reading connected text (Bear et al., 2020; ILA, 2019; Johnson, 2016). Besides, another principle of SP is that this approach prioritizes phonemes (sounds) over graphemes (letter names), which would enable them to blend and decode (Blevins, 2017; Johnson, 2016). These principles lead to the instructional sequence, which is Grapheme-Phoneme Correspondence (GPC), blending, and segmenting as found in major SP programs worldwide such as Jolly Phonics and Read Write Inc., as well as frameworks like the UK's Letters and Sounds.

The first instructional sequence that forms the foundation of SP programs is Grapheme-Phoneme Correspondence (GPC). GPC is the first stage of reading and spelling, where the alphabetic code is explicitly taught. It is the relationship between a printed letter or letters (grapheme) and its corresponding sound

(phoneme) in a way that early readers can decode words by matching sounds to letters and spell by translating sounds into the correct letters. For instance, "cat," "kite," and "duck" share the same /k/ sound, yet in each case it is represented by different graphemes: "c," "k," and "ck." The English writing system is complex, hence, the need for children to learn many more spelling units than the 26 letters, or graphemes, of the alphabet and their associated sounds, or phonemes (Wang et al., 2020). Blending is also part of the instructional sequence after they have learned GPC. Learners are taught to synthesize or blend the sounds together to read the whole words. As the complementary skill to blending, learners are taught to segment. Segmenting is when learners are taught to reverse the process of breaking words down into their constituent phonemes to spell them. This approach ensures that early readers would be able to read and spell effectively.

Blending in Practice: Instructional Strategies

The blending instruction is aimed at giving early readers the skill of achieving precise and automatic phoneme synthesis in order to construct recognizable words. Those who do not have the ability to blend will not be able to decode, which would affect their fluency and comprehension as readers. Walther (2019) noted that pedagogical approaches play an important role when instructing blending so that pupils can attain a strong foundation of reading for academic success and literacy. Therefore, effective pedagogy for teaching blending demands more than just explaining the concept of blending to students but rather employs techniques that are able to assist scaffolding in students' thought processes.

Research has suggested that children perform best on productive word blending when they are given continuous phonation or continuous blending (Gonzalez-Frey & Ehri, 2021). For example, when the child makes the sound continuously as they sound out the word (e.g., "ssssssaaaat"). Imitating /s/, and then /a/, and then /t/, can be a challenging experience for novice readers. By pronouncing the word 'sat' as a single unit, they can connect the alphabet code more easily with the oral word. Thus, the approach reduces the cognitive load associated with possessing isolated phonemes in working memory and then performing the blending process.

In teaching blending, multisensory tools are typically employed by instructors through the use of physical objects such as magnetic or big letters to provide visuals for students' auditory processes. For example, the letters "s," "a," and "t" can be arranged separately on a board. The teacher moves the s towards the a and shifts the set to the t while pronouncing the sounds "ssssss," "aaaaa," and "t." By this, students are able to construct their schema network in their head by experiencing new pathways to reach phonemic data and decode (Sutfin, 2025).

Blevins (2016) suggested explicit teacher modeling as a practice to teach children oral blending by "I do, we do, you do." Teachers can start with thinking out loud, "I'm going to read this word. I see the letters s, a, and t. I know the sounds of /s/, /a/, and /t/. Now I'm going to combine them, sssssaaaat. Sat." This is the "I do" phase. Then, in the "we do" phase, the teacher guides the students through combining the word, providing immediate corrective feedback. Finally, students attempt to blend independently in the "you do" phase. Teacher-guided practice enables learners to blend independently and correct any mistakes made in the process with the guidance of the teacher.

Segmenting in Practice: Instructional Strategies

Segmenting is another critical skill in the development of phonemic awareness apart from blending. Segmenting involves identifying individual sounds (phonemes) in a word. Researchers suggested that instructional practices on phonemic awareness skills such as phoneme segmentation should be conducted in direct and fast-paced lessons that include a small group of children consisting of tasks that require the children to identify and manipulate sounds in spoken words.

One of the instructional strategies recommended to teach phoneme segmentation is sound boxes (“say it, move it activities”), which was founded by D. B. Elkonin. This strategy aims to help children isolate and count the sounds in a word, providing a more tactile and visual experience for segmenting. For example, a teacher presents a word (e.g., a "ship") with a series of connected boxes below it. Each box represents each phoneme (e.g., three boxes for /sh/, /i/, and /p/). The student gets counters or tokens, and the word is read slowly to him

or her. He/she advances a counter into a box for every phoneme he/she hears. By using sound boxes to teach segmenting sounds and developing letter-sound correspondences to students at risk for failing early literacy, the kids showed great progress on segmenting sounds, developing letter-sound correspondences, and spelling words (Keesey et al., 2015).

Another instructional strategy in teaching segmenting is writing from dictation. This is the most common application of segmenting, where students are taught to segment words into phonemes and then write the graphemes that correspond to each sound, also known as phoneme-grapheme mapping. A study done by Berge in 2019, where an intervention was given to students by using phoneme-grapheme mapping practice, resulted in increased student fluency in letter-word-sound mapping. Despite the progress made, the student still needs ample instructions and support to improve and progress. The study portrays how phoneme-grapheme mapping helps students connect the sounds of spoken language to written language and build their fluency and confidence through strengthening their reading and writing skills (Berge, 2019).

The instructional strategies suggested for both blending and segmenting reflect how the SP approach can be implemented in the teaching of the English language in classrooms. Despite the strategies and tools suggested by the researchers, students will still need ample support from educators in order to learn how to read. Early mastery in phonics has a positive impact on students' reading fluency and comprehension. However, students that struggled with phonics will face issues in reading and writing. (Double et al., 2019).

Teacher's Pedagogical Content Knowledge (PCK)

Shulman's Concept of PCK

Pedagogical Content Knowledge (PCK) was founded by Lee Shulman in 1986 and 1987. Shulman defined the concept of PCK as the capability of a teacher to transform the subject matter knowledge into pedagogical practices that are varied, suitable for students' interests and abilities. He emphasized the need for both content knowledge and pedagogical knowledge for the success of teaching and learning. Content knowledge or subject matter knowledge is the knowledge of the specific topic, whereas pedagogical knowledge is the teaching of principles and strategies that are implemented in classrooms. However, PCK goes beyond just understanding the concepts of subject matter and pedagogical knowledge. It involves a deep comprehension by teachers of how to structure and deliver content to make it understandable and interesting for the students. Shulman also argued for the necessity to articulate clear performance standards for teachers to elevate teaching to a more respected and rewarded profession to further increase students' academic performance (Shing et al., 2015).

As emphasized by Shulman, PCK is the combination of subject matter knowledge and pedagogical knowledge. Hence, one of the core components of PCK is knowledge of instructional strategies. Teachers are responsible for transforming content knowledge into forms that can be comprehended by students. This can be achieved by critically selecting, adapting, and transforming teaching methods, models, analogies, and curricular materials to make the subject matter accessible to all learners (Tallman, 2023). Teachers reflect critically and interpret the subject matter before transforming their understanding of the content they are going to teach into a form understood by the students (Shulman, 1987). Shulman termed the process of transformation as pedagogical reasoning and action, which is part of the process where teachers develop, apply, and improve their pedagogical knowledge (Shulman, 1987).

Another core component of PCK is knowledge of curriculum and resources. Shulman believes that teachers are the primary medium for students to engage with the curriculum content. This knowledge encompasses familiarity with instructional materials and alternatives for a given subject. It also includes deeply understanding the topics that the students are supposed to learn and being aware of the content that has been taught and will be taught along with the materials needed for the delivery of content.

Another core component of Shulman's PCK concept is knowledge of students' understanding and potential misconceptions. It is crucial to understand students' motivations, learning trajectories, and their preconceptions. Despite the importance placed on addressing students' understandings, studies have shown how many teachers remain unaware of students' misconceptions and respond to them by simply reteaching

correct information (Chen et al., 2020) This is due to the assumption that subject matter knowledge only is sufficient (Chen et al., 2020). Effective instructions require teachers not only to master subject matter and pedagogical knowledge but also to be able to address students' specific conceptual difficulties. Teachers are responsible for using active learning strategies to help students see how their misconceptions are hindering them and guide them towards overcoming these difficulties.

PCK for Teaching Reading

A teacher's Pedagogical Content Knowledge (PCK) is the bridge that connects the pedagogical practices in teaching SP to the needs of the students. This knowledge encompasses of understanding the content knowledge and pedagogical knowledge to make input accessible for all students.

The Content Knowledge

In order to teach early readers, teachers need to master the foundation of the English language, mainly the linguistic knowledge, the principles in phonics, and the alphabetic principles. Linguistic knowledge encompasses 44+ phonemes and the various graphemes that represent them, whereas phonic principles are the understanding of digraphs, trigraphs, split digraphs, and the distinction between continuous sounds and stop sounds, which is crucial for effective blending. Alphabetic principles, on the other hand, include the written spellings that represent spoken sounds. Hence, effective teaching of phonics depends on the knowledge of educators, how they can continuously assess students' learning needs, and how they can deliver focused instructions that promote students' growth. These abilities are especially critical in teaching phonics, which is essential for early literacy (Scull & Lyons, 2024).

The Pedagogical Knowledge

In the teaching of blending and segmenting for English as a second language, teachers need to be able to articulate phonemes correctly. This is a key to teaching students on how to blend. Besides, teachers need to also be able to explicitly teach students how to blend and segment through specific instructional strategies and scaffolded techniques. According to Ashby et al. (2024), the implementation of phonological awareness instructions can be done in general English settings and bilingual classrooms, which involves students alternating between the languages of instruction, allowing them to practice blending and segmenting in both languages. Many research has discovered how phoneme awareness development in one language transfers to other languages. The teaching of blending and segmenting can also be successfully done through the use of the correct resources, behavior management, and classroom routines.

Ashby et al. (2024) suggested several key pedagogical principles in teaching blending and segmenting. One of the pedagogical principles is a four-step routine by using fingers. First, students repeat the word, followed by stretching the word slowly while extending a finger for each sound. They then isolate and say the sequence of sounds while pointing their fingers and lastly blend the sounds back to say the word. Another pedagogical principle suggested is using chips. This involves a five-step routine where students repeat the word, stretch the word while placing a chip for each sound, touch each chip when saying the individual sound, blend the sound to say the word, and lastly return the chip and start with the next word.

In sum, Shulman's theory of PCK provides a theoretical foundation in understanding the teaching of early reading skills, which are blending and segmenting. Effective teaching pedagogies require deep knowledge of the content of phonics and also pedagogical practices that would make the content accessible to all students.

METHODOLOGY

For this study, a qualitative research approach was employed. This approach is used to explore complex social phenomena in natural settings. As this study is seeking to understand the pedagogical practices practiced by teachers in teaching SP, especially the *how*, and the *why* of the instructions chosen by the teachers, this study cannot be done by relying solely on numerical data. One of the benefits of qualitative research is that it helps

to explain behaviors and mechanisms of human actions that are difficult to capture with numerical data (Cleland, 2017).

Qualitative research involves collecting non-numerical data such as text, video, and audio to better understand one's ideas, opinions, and experiences, used to discover intricate details that can generate new ideas for future research (Bhandari, 2022). The qualitative approach also allows the researcher to gather rich and detailed data through interviews and documents. It allows for a deep understanding of the implementation of SP in a real-world context.

This study adopts an instrumental case study design. This approach helps to produce an in-depth investigation of a contemporary phenomenon in a real-life context (Coombs, 2022). A case study usually involves detailed investigation of an individual, group, or event gained through interviews, observations, and documents. This is a common method used in social sciences and humanities to explore complex phenomena. For this study, the case can be defined as the ecosystem of pedagogical practices for teaching blending and segmenting within the Year 1 and Year 2 context in a government Malaysian primary school context.

This study is conducted in the Sekolah Kebangsaan Jati, a national primary school in Shah Alam, Selangor, Malaysia. The school chosen was to represent teaching in national primary schools in Selangor as teachers have presently adopted the standardized curriculum and were teaching the students in classrooms that comprised between 35 to 45 students.

Sekolah Kebangsaan Jati is comprised of approximately 500 Year 1 students and 400 Year 2 students. It is a large school, consisting of a total of around 2500 students from Year 1 to Year 6. Each year consists of 11 classes, with each class comprised of 35 to 45 students. The student body is mainly Malay students, and it operates on both morning sessions (Year 4 to Year 6) and afternoon sessions (Year 1 to Year 3).

The teaching and learning of phonics at Sekolah Kebangsaan Jati is carried out within the KSSR *(Kurikulum Standard Sekolah Rendah)* curriculum. Phonics is integrated into the teaching of English as a Second Language (ESL), focusing on the early years (Year 1, 2, and 3) to improve the students' reading abilities.

At the beginning of the year, especially for Year 1 and 2 students, English teachers would do early screening and interventions for students that are struggling with English literacy by focusing on phonics constructs to address students' difficulties with reading literacy as early as possible.

It is also important to note that formal permission is secured from the school before obtaining consents from the participants.

The selection of the teachers was through purposive sampling. The researcher has purposely selected the participants based on the classes they are teaching (Year 1 and 2 classes), main subject English, experiences in teaching, and their willingness to participate in this study. Thus, six teachers participated in this study to provide their views and insights into the implementation of SP. The selection criteria ensure representations of varied teaching experiences that capture diverse pedagogical approaches.

In addition to this, six students from each teacher's class are selected for individual interviews. The selection is done based on the students' reading abilities to ensure that a range of reading abilities are represented in this study. The participants include two students that are identified as struggling readers, two that are able to achieve the objectives of the lessons, and another two that are exceeding the teachers' expectations. This stratified sampling approach aims to represent various reading abilities and experiences from the students to help the researcher gain insights on the teachers' lessons. Stratification is a technique that separates a population into groups based on the characteristics that define the population. In stratified sampling, a random sample is drawn from each stratum to represent the whole population. This allows capturing major variation and not just the identification of a common core, though the latter may emerge in the analysis as argued by Palinkas et al. (2015).

Data Collection Methods

Participants

The selection of the teachers was through purposive sampling. The researcher has purposely selected the participants based on the classes they are teaching (Year 1 and 2 classes), main subject English, experiences in teaching, and their willingness to participate in this study. Thus, six teachers participated in this study to provide their views and insights into the implementation of SP. The selection criteria ensure representations of varied teaching experiences that capture diverse pedagogical approaches. The teachers' profiles are outlined in the table below.

Profile of teacher participants

Pseudonym	Year	Subject specialization	General background
Mr. Mal	1	English	6 years of teaching experience.
Ms. Su	2	English	20 years of teaching experience.
Ms. Fana	2	English	6 years of teaching experience.
Ms. Dina	1	English	10 years of teaching experience.
Ms. Fiza	1	English	6 years of teaching experience.
Ms. Ash	2	English	5 years of teaching experience.

Note. All participants specialize in teaching English subject and phonics.

In addition to this, six students from each teacher's class are selected for individual interviews. The selection is done based on the students' reading abilities to ensure that a range of reading abilities are represented in this study. The participants include two students that are identified as struggling readers, two that are able to achieve the objectives of the lessons, and another two that are exceeding the teachers' expectations. This stratified sampling approach aims to represent various reading abilities and experiences from the students to help the researcher gain insights on the teachers' lessons. Stratification is a technique that separates a population into groups based on the characteristics that define the population. In stratified sampling, a random sample is drawn from each stratum to represent the whole population. This allows capturing major variation and not just the identification of a common core, though the latter may emerge in the analysis as argued by Palinkas et al. (2015).

Semi-structured Interviews with Teachers

Semi-structured interviews can be defined as exploratory interviews. Magaldi and Berler (2020) view semi-structured interviews as a guide that is typically focused on the main topic that provides a general pattern. Structured interviews differ from semi-structured interviews. Structured interviews are more formalized and have a limited number of questions, whereas semi-structured interviews allow for more questions to be brought forward and are more flexible (Ruslin et al., 2022). The rationale behind choosing this method is to ensure that the research is able to gain input on teachers' thought processes, perspectives, reasonings for choosing any pedagogical perspectives, and challenges that they encounter as they are implementing SP.

The questions for the interview are developed based on the research questions. The interview questions are developed based on three main themes, which are the teacher's knowledge and pedagogical practices, the teacher's perspectives on the impact of SP, and the challenges that they encounter.

The locations of the interviews are varied depending on the teachers' availability at the time. Each interview lasted around 20-40 minutes and was recorded by the researcher with consent from the teacher participants. The recordings are transcribed verbatim by the researcher for future data analysis.

Semi-structured Interviews with Students

Similarly, semi-structured interviews are also carried out with student participants to ensure that the researcher can provide a private and confidential space for the students to express their thoughts. The interview questions

are developed based on the research questions. The questions are divided into three main themes, which are their general feelings on English and phonics lessons, their experiences in learning blending and segmenting, and also their perceptions and challenges in learning these skills.

The interviews with the students are conducted in the students' classes. Each interview lasted around 10-15 minutes and is being recorded by the researcher with parental consent and child assent.

RESULTS AND DISCUSSIONS

This study provides a comprehensive discussion based on the findings and synthesizes the findings to the conceptual framework and a wider body of existing literature. This chapter also discusses the significance of the results in fulfilling the research objectives.

Research Question 1: What instructional strategies do teachers employ to implement the specific decoding sub-skills of blending and segmenting in their synthetic phonics lessons for Year 1 and Year 2 students?

The findings reveal a range of instructional strategies employed by the Year 1 and 2 teachers for teaching blending and segmenting, which reflects the teachers' Pedagogical Content Knowledge (PCK). The teaching strategies include direct modeling, multisensory activities, and adaptive strategies.

Sound Out Phonemes/Words (I Do, We Do Model)

The findings revealed that most of the teachers demonstrated heavy reliance on sounding out phonemes or direct modeling to teach the students blending. This indicates that the teachers have the foundation of Pedagogical Content Knowledge (PCK), as they are able to transform the content of Synthetic Phonics (SP) into a teachable format.

The strategy of sounding out phonemes and words was implemented through the 'I Do, We Do' model. The strategy was identified as one of the teachers stated, *"I write the word on the whiteboard, teach them how to pronounce each sound, and call out some names to try it out."* This portrays the teacher's effort in scaffolding and modelling the skills to the students.

The 'I Do, We Do' model is designed to slowly release the responsibility from the teacher to the students so that students can have more autonomy to perform the activities independently (Kammer & Hays, 2023). This is a clear method of scaffolding the students. For example, when the teacher articulates /sh/.../o/.../p/ and then combines them together to become *sh-o-p... shop,* it indicates direct instruction in metacognition as the teacher explicitly teaches the mental algorithm for blending. The teacher is not just giving a word for the student to pronounce, but the teacher is also providing a script for the students to internalize a voice in their head by thinking, *"Okay, I know the sounds; now I should combine the sounds slowly."* Hence, the model aims to not just provide the answer to the students but mainly to provide a model of how to think in order to blend correctly. According to Burns (2024), students that understand how to learn and think are able to recreate situations that foster their learning.

The implementation of this strategy reflects the teachers' PCK. Shulman (1987) argued that effective teaching requires the combination of Content Knowledge (CK) and Pedagogical Knowledge (PK). A teacher with a strong foundation of CK understands that blending is the process of combining phonemes to form a word. Therefore, a teacher that has this input knows how to model continuous sounds (e.g., /m/, /s/), stop sounds (e.g., /t/, /p/), and digraphs (e.g., /sh/, /ch/).

A teacher with strong PK understands the importance of scaffolding and managing classroom activities either in groups or individually. The PK of the teacher informs the teacher's role as a facilitator during the 'We Do' and 'You Do' phases. According to the Organisation for Economic Co-operation and Development (OECD, 2017), one of the dimensions of PK is having knowledge and command of teaching methods and understanding of when and how to apply the methods in promoting students' understanding.

As a result, PCK is the combination of CK and PK. It is the understanding of what makes a concept easy or difficult and how the teacher can formulate and present the content effectively to various learners. The teachers portrayed deep understanding of the PCK in teaching phonics, as the student participants were able to blend and segment the word that was given to them. The students' ability to decode the word 'cap' demonstrates the teachers' knowledge in making phonics comprehensible to the students through the 'I Do, We Do' teaching strategy. However, the application of Shulman's framework is generic, as it may not address the challenge of addressing the students that encountered difficulties in grasping the modeling of the phonics.

Multisensory Activities

A more developed representation of the application of PCK is reflected through the implementation of multisensory activities in teaching blending and segmenting. The strategy was implemented when one of the teachers described using fingers tapping for segmenting and swift motion down the arm for blending.

The strategy aligns with the principle of Universal Design for Learning (UDL) and demonstrates teachers' capabilities to teach the students how to blend and segment using strategies other than auditory processing. UDL is a set of principles for designing curriculum that provides all individuals with equal opportunities to learn (LINCS, n.d.). UDL principles aim to provide flexible ways of presenting information or concepts, how to execute the task, and ensuring students are engaged throughout the learning. By creating a physical metaphor for the mental process, the teacher is helping the students to understand concepts and ideas of decoding skills.

This strategy provides a bridge to the abstract decoding component of the Simple View of Reading (SVR) framework. For an early reader, segmenting is an invisible mental process that the students may find difficult to execute. However, the fingers tapping to segment makes this process physical and visible. They are able to feel and see the distinct units that must be processed for accurate decoding.

Diagnostic and Adaptive Strategies

The teachers portray a high level of PCK, as they are able to identify the cause of a student's struggle and adapt the instructions according to the students' needs.

This is proven through the interviews when one of the teachers explicitly taught the students how to start by slowly sounding out /c/, then /at/, followed by using word families of 'at,' for instance, bat, hat, mat, fat, pat, and rat.

Another piece of evidence of a high level of PCK is reflected when a teacher allows the students to spell by letter names for low-proficient students. This is a pragmatic adaptation to avoid total disengagement from the students. This practice can be understood through the Cognitive Load Theory. Cognitive load refers to the amount of information our working memory can process at any given time; it helps us to avoid overloading the learners with more than they can effectively process into schemas for long-term memory storage and future recall (Medical College of Wisconsin, 2022). As the teacher reduces the student's cognitive load, it prevents the student from getting disengaged and scaffolds a path to the correct ways to decode.

Furthermore, diagnostic skill is the core of Schulman's PCK theory. According to Kramer et al. (2021), a teacher's professional knowledge affects not only the ability to deliver high-level instructions but also to deliver diagnostic activities and diagnostic accuracy. For example, when the teacher identifies that some of the students struggle to blend and segment, which affects their ability to read, the teacher would provide one-to-one intervention to guide the students using materials such as the 'Read Easy' book set. This practice aligns with the model of a 'teacher as a diagnostic clinician' (Shulman, 1987), where expert teachers are those who are able to perceive student thinking, interpret it accurately, and act upon it with a tailored pedagogical response.

Research Question 2: What challenges do teachers encounter in developing students' blending and segmenting skills during synthetic phonics instruction for Year 1 and Year 2 students?

The findings reveal that teachers' ability to develop the students' literacy skills is constrained by a few challenges. The challenges include the class size and students' lack of language exposure. These challenges prohibited phonics skills from being implemented effectively.

Class Size

The teachers reported on the class sizes of 40 to 45 students, which they believed hinder the students' learning process. According to Yamamori et al. (2021), the number of pupils in a class has a considerable impact on both the educational experience students have and the academic results they attain. Class size affects the ability to integrate differentiated instruction and high-quality formative assessment. Ms. Fana's comparison, as she stated, if the number of students in the class is around 27 students, she can '*call the students and check on their reading one by one*,' is a perfect example of this illustration.

Anass (2020) argued that large class size affects educators' interpersonal relationships with students, their instructional methods, their assessment of student learning, their preparation for teaching, their morale during teaching, and their classroom management. When a large class contains proficient alongside non-proficient students, teachers have to teach using a one-size-fits-all approach. Despite being aware of the instructional strategies that can be implemented to teach blending and segmenting, this situation is overwhelming even for the teachers, which ultimately widens the gap between proficient and non-proficient students.

The findings also revealed that the teachers demonstrate their PCK by understanding the strategies that should have been employed, such as the one-to-one strategy. However, the systematic barrier of the class size prevented them from applying their knowledge into practice.

Lack of Exposure

The teacher concern that students are only exposed to English during the one-hour session highlights a critical issue that affects the students' proficiency skills. Children do not develop language skills through learning grammar and rules to form sentences, as they are actually wired to learn language naturally through exposure to the language (Secora et al., 2024). Similarly, a child's phonemic awareness is developed through frequent hearing and distinguishing the sounds in the language. Without consistent engagement with the language itself, the child is deprived of auditory input that can help the child to develop the very foundation of phonemic awareness. In addition to this, phonemic awareness is not an innate skill but rather built through constant exposure to the sounds of the language.

According to a study by Sharp (2015), students that are exposed to reading before entering kindergarten are more likely to meet the expected goals in literacy throughout the year compared to students with little or no exposure at all. This directly applies to the context of learning English as a second language. Students without a rich language environment may be at a disadvantage compared to their peers. This would cause the conscious task of blending and segmenting sounds to be difficult to comprehend.

Lack of exposure to the target language would affect their literacy skill. As emphasized by the theory of Simple View of Reading (SVR), without a strong foundation of linguistic comprehension, the decoding skills taught are unlikely to lead to successful reading comprehension. Word reading and linguistic comprehension are the "proximal" causes of reading comprehension (Gough & Tunmer, 1986).

How do teachers and students perceive the impact of blending and segmenting instructions on reading development among Year 1 and Year 2 students?

Teacher Perceptions

Based on the findings, the teacher unanimously perceived that blending and segmenting are crucial skills in developing students' reading ability. Firstly, the teacher observed that phonics instructions helped improve her

students' reading fluency, especially for the low-proficient students with a lot of practice and drilling. This aligns with Cunningham (2017), which stated that phonics enables readers to determine unknown words, and once they are able to determine unknown words, they can make meaning of the text. The teachers observed that successful decoding leads to fluent reading and, lastly, to comprehension.

This also leads to understanding how decoding skills are the prerequisite for comprehension. The teacher posited a direct link of decoding to comprehension by stating that these skills are the 'foundation of reading comprehension.' Without blending skills, students cannot read words, without segmenting, they cannot spell, and without these skills, they will 'struggle to understand higher-order reading comprehension.' An analysis from a study done in the Ikungi District provided a clear representation of how the foundations of phonics instructions enhanced students' comprehension abilities (Clement & Otieno, 2024).

Besides, the teachers believed these skills were more reliable as the foundation of reading skills and helped students to progress through their academic years, preventing difficulties in the future. One of the difficulties that was referred to by the teachers may include negative attitudes toward reading that cause students to disengage. Davis et al. (2018) noted, a lack of motivation is a key cause of disengagement. By not having reading skills and the motivation to learn reading, students' academic progress may be hindered (Röthlisberger et al., 2023). Thus, building a strong foundation of phonics skills is the first crucial step in building fluency, comprehension, and confidence, preventing reading difficulties that can negatively impact their learning in the future.

Student Perceptions

The students displayed mixed feelings regarding the phonics instructions taught by their teachers. For instance, the teacher associated English lessons with fun activities like singing songs, whereas other teacher associated the lessons with fun games. These indicate that the students have a positive affective connection with learning the English subject. However, there were a few students that found the subject challenging, as they perceived English as difficult.

These findings also highlight that while the context of the lessons can be engaging and fun, the core literacy tasks are perceived as cognitively difficult and demanding by the students. According to Singhi and Anmol (2025), active engagement involves students' emotional attitudes, perceptions, and responses toward their learning environments and educational experiences. This was evident as portrayed by Ali and Aishah. In contrast, for the latter group, high cognitive demand overshadowed their potential for positive engagement. Gaskins explains that beginning readers must develop the cognitive flexibility to attend to the phonological, printed, and semantic features of words. (Gaskins, 2008, as cited in Vadasy & Sanders, 2023).

Furthermore, the findings revealed students' level of proficiency and their metacognitive awareness based on their approaches to decode. Proficient students were able to connect the /c/ in 'cap' to 'cat,' which displayed their metacognitive awareness. One student mentioned that the blending can be described as simply pushing sounds together, portraying the student's awareness of the skill and metacognitive knowledge. Metacognitive strategies make students more aware of their phonics and phonological processing by allowing them to manage their decoding difficulties, monitor general reading progress, and apply appropriate reading strategies (Madhavan & Raja 2024). Therefore, in applying phonics skills, an accomplished reader supposedly can perform the skill strategically. In contrast, for the less proficient students, they guessed the word based on the picture shown and spelled using letter names. These indicate that these students have not yet mastered the blending and segmenting skills and still find the skills confusing.

Based on the findings, students also provided clear insights into what makes learning accessible and enjoyable for them. A student's preference for learning through visual animation from YouTube indicates her desire for multimodal support. The concept of multimodality describes the process of making meaning by combining two or more communicative modes such as linguistic, visual, or audio elements (The New London Group, 1996, as cited in Varaporn & Sitthitikul, 2019). Another student commented about enjoying the reading activity if the activity is done with a peer. These findings suggest that utilizing multimodality could be a key strategy in teaching blending and segmenting for the Year 1 and Year 2 students.

In sum, the perceptions from both teachers and students differ from one another in certain areas. Teachers perceived blending and segmenting as a top-down approach to unlock fluency and comprehension for future academic success. On the other hand, students perceived the skills from a bottom-up experience of learning. Their perceptions depend on whether the instruction is engaging and if they consider the tasks achievable. The challenge, however, is the process of 'drilling' the students for Synthetic Phonics (SP) mastery which may be viewed as difficult for the students. Successful implementation of the skills depends on the pedagogical strategies employed by the teachers to make learning more engaging, multimodal, and collaborative, as the students described.

RECOMMENDATIONS

Future research needs to explore the most effective instructional models in SP implementation for different class sizes. Experimental studies should also look into the effectiveness of specific pedagogical practices, like peer-assisted learning and technology-enhanced phonics programs. Apart from this, future research should expand its contexts across different Malaysian regions or between Malaysia and other countries to understand how contextual factors affect the implementation of blending and segmenting skills. The findings would help identify which ones are context-specific, whereby the researcher will be able to recognize specific versus universal challenges.

CONCLUSION

This study concludes that effective pedagogical practices in teaching the SP approach, especially blending and segmenting skills in a Malaysian primary school, are complex, since the implementation of SP requires more than just technical skills. This is a process entailing a teacher's reflective embedding of methodological awareness, contextual awareness, and responsive teaching. However, in this study, there were certain challenges faced by the teachers in implementing the skills. One of the main challenges is fulfilling curriculum demands despite the unfulfilled students' needs. This was reflected in the students' experienced lack of engagement and incapability to master phonics skills. Ultimately, successful implementation of effective blending and segmenting pedagogical practices can be accomplished with collaboration from teachers, educational leaders, and policymakers. Teachers should be responsible for employing effective phonics instruction, educational leaders should be responsible for creating suitable conditions for effective implementation, and policymakers have to ensure that the policies are aligned with the classroom realities.

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