Synthetic Phonics and the Literacy Development of Second Language Young Learners

A Literature Review of Literacy Ideologies, Policies, and Research

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The candidate confirms that the work submitted is her own and that appropriate credit has been given where reference has been made to the work of others.

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List of Abbreviations

BB: Big Book

DC: Direct Code

EP: Embedded Phonics

ESL: English as a Second Language

JP: Jolly Phonics

L1: First Language

L2: Second Language

NCLB: No Child Left Behind

PASP: Phonological Awareness plus Synthetic Phonics

Abstract

This critical study explores the relationship between synthetic phonics and the literacy development of second language young learners (aged 4-12). The definition of Literacy is discussed, as well as how the concept of reading is constructed by dominant ideologies of literacy, and how this subsequently shapes educational policy. In addition, a review of the relevant literature relating to the effectiveness of three approaches of language instruction has been conducted ('whole language', 'analytic phonics', and 'synthetic phonics'). A sample of research studies selected for analysis in this critical study indicate that synthetic phonics instruction is effective in terms of individual word identification and word reading; however, the effects on reading comprehension are not found to be statistically significant.

Chapter 1: Introduction

The use of a synthetic phonics-based approach to teaching reading has been highly advocated by educational policy-makers in the United Kingdom and, accordingly, implemented by teachers. However, according to the literature related to second language reading acquisition (e.g. Birch, 2002; Nuttall, 1996), it has been found that sufficient evidence does not exist in terms of whether or not a synthetic phonics-based approach is effective for second language learners and their overall literacy development. In addition, research evidence related to literacy development and a phonics-based approach for second language learners (L2) is quite sparse, as the majority of studies have been conducted with first language learners (L1). As a result, one major assumption is that the language learning experience of L1 learners is the same as that of L2 learners, and therefore, the same methodological and theoretical constructs that have been designed for L1 learners can be applied to L2 learners. However, it is evident that second language learners have different language experiences, as they already possess knowledge of a first language, and it is well established in the literature that the language learning processes are quite different for L2 learners than L1 learners (e.g. Aebersold & Field, 1997; Birch, 2002; Koda, 2005;). Consequently, in this critical study, I shall discuss the literature related to second language acquisition and synthetic phonics to determine how research can help to inform whether or not a synthetic phonics-based approach is effective for ESL (English as a Second Language) young learners' literacy development.

1.1 Rationale and Context

From my experience of teaching young learners (aged 5-6) in British Columbia, Canada, I have found that many teachers utilize a phonics-based approach with both first (L1) and second (L2) language young learners who demonstrate difficulty in reading. Accordingly, I have also implemented the use of a synthetic phonics-based approach to the teaching of

reading to young learners. However, when using this approach, it was not clear to me whether or not the use of a phonics-based approach alone was of any benefit to my learners, since the focus was primarily on teaching decoding skills, rather than a focus on comprehension (meaning-making). In addition, I found that the materials I was using tended to be highly decontextualized, and therefore, less meaningful for my learners. Moreover, in terms of context, I have found that this phenomenon of using a 'phonics-based' approach is not exclusive for the local level (i.e. for teaching L1 or L2 students in the Canadian context); but, rather, is prevalent at a global scale (the phonics-based approach is being advocated for use with L1 and L2 students in many countries around the world). As such, since phonics-based approaches have had such a global effect, I believe that it is important to understand the relevant theory and research related to this topic.

Aim of this critical study:

- To critically review and critically analyse the literature related to synthetic phonics and second language acquisition in order to determine whether or not a synthetic phonics-based approach is effective for second language young learners aged 4-12 (where 'effective' can be defined as learners' ability to demonstrate efficient word recognition *and* the ability to comprehend a given text as a whole).

Research Questions:

- How is 'Literacy' variously defined in the literature on literacy pedagogy?
- What does the literature suggest in terms of the underlying processes involved in reading for both L1 and ESL young learners, and what models are used to represent the reading process?
- How do policy documents present literacy, and how does this subsequently affect how the teaching of reading is implemented in the young learner classroom?
- What does a sample of research studies in relation to the implementation of a synthetic phonics approach with young learners (aged 4-12) suggest?

1.2 Organization of this Critical Study

In the first chapter of this critical study, I have outlined the underlying rationale for my study, the aim of my study, and my proposed research questions. The second chapter of my

study, deals with the literature related to the definition of 'Literacy', and how it can be variously understood. Chapter three focuses on the definition of reading and the underlying processes involved with reading. In addition, different models of reading and types of reading instruction are discussed. In chapter four, educational policies are examined and analysed in relation to how literacy is presented in policy. Lastly, chapter five contains an analysis of research in relation to synthetic phonics and the subsequent findings of a sample of studies are investigated.

Chapter 2: How 'Literacy' is Variously Defined

Since the notion of 'literacy' is central to many educational systems around the world, and directly impacts how educational policies are formulated and implemented in a given society, it is important to primarily understand what is meant by the concept of literacy. It is evident, however, that the definition of literacy can be associated with a number of meanings. For example, the term literacy

> "…may refer to degrees of proficiency with print, ranging from the formation of a personal signature to the interpretation of a written passage; or it may reflect no proficiency at all, representing nothing more than a duration of time spent in a building called 'school'…" (Hillerich, 1976, p.50).

In this sense, the concept of literacy depends on how it is defined by the members of the community in which it exists, and as a result, the concept of literacy is highly variable. Therefore, the different notions of literacy shall be discussed in this critical study, as well as their pedagogical implications.

2.1 Literacy as a Skill

In general, the definition of literacy in relation to educational policies, assumes some form of assessment, and literacy is considered as something which can be measured 'objectively' and ultimately quantified. This definition of literacy is referred to as 'skills-based' literacy, which relates to the measurement of the learners' ability to read, write, listen, or speak 'effectively' (where the definition of 'effectiveness' can vary based on the conventions associated with the particular society), without specific consideration to learners' previous social and cultural influences. The National Literacy Strategy in the United Kingdom, for example, defines literacy as a set of skills, comprising of reading, writing, listening and speaking, which are all perceived to be equally important (Department for Education and Employment, 1998, p.3). As such, this definition of literacy emphasizes the view that literacy is a set of discrete skills (reading, writing, listening, and speaking) which

are to be acquired by all learners. Consequently, the skills-based approach is often advocated by policy-makers, as it allows reading, for example, to be understood as a skill

> "…which can be broken into parts and taught and tested. Learning to read is accomplished by breaking the skill into components starting from the simple and gradually building up… This leads on to the notion of there being clear and discrete stages in learning, with separate skills learned in a linear order" (Barton, 2007, p.161).

However, the concept of reading is much more complex than the skills-based perspective takes into account, as reading is a process which is highly dynamic and does not necessarily occur in a linear manner. Furthermore, the skills-based view of literacy does not explicitly take into consideration the social dimensions related to literacy; but rather, perceives literacy as something which can be measured objectively in isolation from learners' social and cultural experiences. Street (1995) refers to this as "…the 'autonomous' model of literacy… [which has] attempted to treat literacy as an independent variable, supposedly detached from its social context…" (Street, 1995, p.76). In this sense, literacy (and the 'four' skills) are developed within the individual without any influence from external sources. Thus, literacy is understood as an individual cognitive event, occurring in seclusion (within one's own mind), and is therefore, generally taught in a decontextualized manner (as a set of discrete skills).

2.2 Functional view of literacy

When extended, the 'skills-based' view of literacy can be associated with the idea of 'functional' literacy, where "[f]unctional literacy consists of some of the *basic skills* that the individual needs to fulfil their economic and social potential. The concept of functional literacy should therefore be associated with that of education and training as adding value through training in basic skills" (Holme, 2004, p.12).

Consequently, functional literacy still focuses primarily on the teaching of the 'four skills'; however, with the presumption that these skills will serve an economic purpose for the individual. In this way, the notion of 'functional' literacy implies that literacy is to be used for a specific function, and, thus, the definition of 'functional' literacy can be associated with the use of literacy for a particular purpose. For example,

> "[i]n educational policy, the 'function' of literacy, as with learning in general, is often economic. Literacy is widely assumed to have an economic impact, as part of a 'knowledge economy', where knowledge itself can be sold or exchanged. Students of literacy are cogs in the economic machine, and the overriding purpose of literacy education is to make students more economically productive" (Cooke & Simpson, 2008, p.104).

If taken to the extreme, this perception of literacy can be associated with the dangerous view that literacy is a 'commodity' which is sold to only those who are able to afford it, which can further exacerbate power differentials within communities (at the micro-level), and between countries (at the macro-level). This forms a sort of exclusionary perspective of literacy, where only the elite of the community are able to have access. For example, in India, education is frequently equated with social status, and only those who have the appropriate financial resources to afford an education are able to gain access to certain social sectors, and therefore, are considered the 'elite' in their given communities. Moreover, Ramanathan (2007) argues that the divide is sustained as a result of the lack of access to English schools due to low fiscal capacity of individuals in the community. Therefore, in India, "[s]tudents schooled in the vernacular in the K-12 years – typically lower-income children – often have little choice but to go to vernacular-medium colleges, a development that limits their opportunities for social advancement, since English and English-medium institutions appear to be tickets to the key goods of the society" (Ramanathan, 2007, p.52). Literacy, in this sense, is viewed "…as a uniform substance – a valuable commodity –

that some have and others don't, that confers power and enlightenment, that can be acquired (at a price) and transmitted to others" (Kern, 2000, p.24).

From the macro-level perspective (global perspective), the concept of literacy can be equated with the 'standard' of education of a country as a whole, which can further intensify the power differentials that exist between countries, as it allows for a quantifiable distinction between 'developed' countries and 'developing' countries. For example, according to Street (1995), literacy is used to assess "…the degree of 'development' in Third World countries… [through] their literacy 'rate'…" (Street, 1995, p.17). Conversely, the connotations associated with 'illiteracy' can be associated with the notion of 'inadequacy' and implies that people are 'less able', and, therefore, in positions of 'less power' (also known as the 'deficit' view of literacy). For instance, "[t]he collocation of 'literacy' and 'problem' reveals the underlying concept of a lack within an individual, which can be topped up or remedied by instruction" (Baynham, 1995, p.7). In this sense, people who are 'literate' are perceived to have more power and are, therefore, in a position where they are able to 'fix' the problems (or 'deficits') that are associated with 'illiteracy'.

In relation to young learners, on the other hand, learners will almost certainly not be aware of the connotations associated with the notions of 'literacy' and 'illiteracy'. However, this awareness in young learners can be developed from an early age, and young learners can be socialized to believe that they require the dominant literacy skills of a more powerful nation (e.g. Western ideologies of literacy) in order to be recognized as a part of a given society. As a result, "[t]his leads to another implication related to the *acquisition* of literacy. That is, the need for socialization or acculturation into the particular conventions of creating and interacting with texts that characterize a particular discourse community" (Kern, 2000, p.35). In other words,

the concept of literacy is socially constructed, and those who wish to engage with the dominant discourse community, are required to become socialized, to some extent, within it. This, in turn, implies some form of exclusion, where only people with the appropriate language knowledge or linguistic 'code' of the dominant community can successfully interact and become a part of that discourse community.

Consequently, this concept of literacy assumes that learners enter into a school or educational institution where literacy skills equate only to the learning of 'English', and neglects the fact that learners may already have a pre-existing notion of literacy which may differ from that of the dominant ideologies presented in school. For example,

> "…in most cases in the contemporary world, literacy is not being introduced entirely fresh to 'illiterate' populations. Rather, most people have some experience of forms of literacy, whether as in these cases, through traditional religious texts, or… through exposure… to the commercial literacy of local elites or neighbouring cultures" (Street, 1995, p.42-43).

Young learners, for example, most probably have already had exposure to print, television, and advertising (e.g. labels on household items) before even entering an educational institution. According to Heath's (1983) ethnographic account of two communities (Roadville and Trackton) in the United States of America, it was found that before even entering school, children had already developed a sense of literacy from their exposure to print in their communities, and it was claimed that the "Trackton children had learned before school that they could read to learn, and they had developed expectancies of print" (Heath, 1983, p.194). In this way, it is important to note that before entering the classroom, children may have already been encouraged to perceive the concept of literacy in a certain way which may be advocated by their parents and other people of 'power' in their society, and this may differ from dominant ideologies advocated by policy-makers. Additionally, in terms

of second language learners, the notions of literacy may not always coincide with the dominant perspectives of 'literacy' in a given society, and "…learners' native language literacy conventions may not automatically predispose them to communicative success in the new language" (Kern, 2000, p.4). Therefore, in relation to educational implications, it is important to realize that learners may already have preconceived ideas related to literacy, and this may affect the subsequent language learning process.

2.3 Social Literacy: Contextualizing the De-Contextualized

Another dimension of literacy can be understood as social literacy, where "…literacy can be seen as a set of social practices which people draw on in literacy events. From this perspective, literacy is located in interactions with people, rather than being a de-contextualized cognitive skill – an activity, rather than just an internal attribute" (Barton, 2007, p.52). For example, according to Heath (1983), in the Trackton community, the activity of reading is considered a public and social event, where individuals are able to express and negotiate meaning collaboratively, and, those who read alone are considered as individuals "…who cannot make it socially…" (Heath, 1983, p.191). As such, implicit in this description is that literacy is socially constructed, and cannot be divorced from society. Accordingly, "…literacy (and indeed cognition in general) is not the personal, idiosyncratic property of an individual, but rather a phenomenon created by society and shared and changed by the members of that society" (Kern, 2000, p.35). Furthermore, by integrating into the society, one's sense of identity is also shaped and formed, and "[i]n learning specific literacy practices we are not just acquiring a technical skill but are taking on particular identities associated with them. Different literacy practices

position us differently in social space" (Street, 1994, p.15). Thus, it can be argued that identity is related to, and is ultimately, shaped by literacy practices.

Consequently, Pahl & Rowsell (2005) argue that

> "[s]paces offer people multiple identities. These different identities infuse their literacy practices… The word 'domain' refers to a particular **space**, or world where literacy is practised… A domain can be identified with a way of being, and in many cases, as a set of cultural beliefs, or a world view" (Pahl & Rowsell, 2005, p.13).

In other words, based on the 'domain' in which one is interacting, one is able to adopt certain characteristics and ways of engaging within that specific 'domain' at that given time. In addition, people can be members of a variety of domains (each having a set of distinct belief systems), and this, affects how people behave in different domains, which in turn, helps to shape their (multiple) identities. Moreover, Millard (2003) suggests that 'domains' can overlap (or 'fuse') and this 'literacy fusion' can be understood "…as fusing aspects of school requirements and children's interests into what becomes both a more tasty and a more nourishing diet" (Millard, 2003, p.6). Thus, in terms of education, it is important to recognize that learners can be associated with a variety of different domains, and learners' previous cultural, linguistic, and social experiences can, and should, be used to enhance learners' motivation in the literacy classroom. As a result, Pahl & Rowsell (2005) introduce a family literacy approach where learners are given the opportunity to connect ideas from their home lives to their school work. Thus, dimensions of learners' varied cultural, linguistic, and social experiences can be fused with experiences that they encounter in the classroom environment.

2.4 Towards Critical Literacy

Moving beyond the social practices view of literacy, a critical view of literacy "…recognizes that literacy practices are far more than cognitive processes, and relate

to other social constructions such as class, gender, ethnicity, and political status" (Cooke & Simpson, 2008, p.110). Critical literacy questions social constructions of literacy, and by doing so, helps to "…develop a critical awareness of social purpose and whose interests are being served by it" (Baynham, 1995, p.3). For example, one can begin to question: *Why should English be perceived as the 'dominant' language in many countries?*, and *Who decides which language is the most valuable in a given society?* By taking a critical stance towards given perceptions of literacy, this helps to "…increase consciousness of how language contributes to the domination of some people by others, because consciousness is the first step towards emancipation" (Fairclough, 2001, p.1). Thus, by educating and empowering people to become more conscious of the existing power relations, it is then possible to move towards a position where dominance can be brought into question, and therefore allows for power to be dispersed to those who may not have had a chance to voice their opinions.

2.5 Definition of Literacy for this Critical Study

As can be seen from the discussion above, the concept of literacy can be seen as encompassing a number of aspects. The concept of literacy in this critical study, therefore, takes into account that there are a number of factors that help to compose the concept of literacy. Consequently, the concept of literacy shall be considered from

> "…a broader scope than the terms 'reading' and 'writing' and thus permits a more unified discussion of relationships between readers, writers, texts, culture, and language learning. A focus on literacy, by considering reading and writing in their social contexts of use, frames reading and writing as complementary dimensions of written communication, rather than as utterly distinct linguistic and cognitive processes" (Kern, 2000, p.2).

In this sense, my understanding of literacy is that literacy is a dynamic and continuous process which involves the interaction of a variety of dimensions (social, cultural,

linguistic, and critical). In addition, I believe that literacy does not exist in a vacuum; but, rather, there are various dimensions which affect how the notion of literacy is understood, as well as how it is implemented in different cultural and contextual situations. I recognize that literacy encompasses a number of different dimensions; however, for the scope of this critical study, I will only focus on theories and policies related to *reading* (writing will not be considered in this critical study, due to contextual limitations). The focus will be mainly on what research implies and how this relates and informs policy decisions and vice versa. Thus, research relating to second language learning (with young learners) and educational policies related to the process of reading will be examined to determine whether or not the theories underlying literacy are consistent with what is being presented in subsequent educational policies.

Chapter 3: Models of the Reading Process

The understanding of the definition of literacy can directly impact how reading is understood and therefore taught in the classroom. For example, according to Kern (2000), if literacy is perceived as skills-based, then the definition of 'reading' would be associated fundamentally with the teaching of reading as a set of discrete skills which can be easily assessed and measured (e.g. decoding of graphic symbols). However, it can be argued that "[s]uch a view, while of course partially true, tends to limit reading and writing to straightforward acts of information transfer" (Kern, 2000, p.23). If this view is taken alone, the definition of reading is highly superficial and does not take into account the complexities associated with the derivation of meaning that occurs during the reading process. Accordingly, various models of reading can help to understand the complex process of reading: bottom-up model, top-down model, psycholinguistic model, and interactive model of reading. These models do provide valuable foundational insight into the underlying processes involved in reading; however, in regards to second language learners, an analysis of cross-cultural research is equally imperative.

3.1 The 'Bottom-up' Model of Reading

Bottom-up models of reading are often associated with a primary focus on the decoding of text, and consequently are considered to be "…serial models, where the reader begins with the printed word, recognises graphic stimuli, decodes them to sound, recognises words and decodes meanings…" (Alderson, 2000, p.16). From a bottom-up perspective, 'lower level' skills such as automatic word recognition and the ability to decode at an efficient rate are perceived as vital skills, as efficient lower level processing allows learners to focus more of their energy on 'higher level' processing, such as the overall comprehension of a text (Grabe & Stoller, 2002). In

this sense, the ability to decode text and automatic word recognition is a prerequisite for successful comprehension, as this model assumes that reading occurs sequentially (with higher-level skills building upon the foundational lower-level skills).

As a result, since the bottom-up approach primarily focuses on the decoding of text, it would therefore, be associated with the phonics-approach of teaching reading (Williams, 2004). For example, learners are exposed to activities where they are initially taught to focus on decoding individual letters, and then individual words, so as to enhance their automatic word recognition abilities. However, it can be claimed that the bottom-up view of reading is restrictive, as it views reading as occurring in a sequential, linear manner, and does not take into account the dynamic and social/cultural nature of the reading process.

3.2 The 'Top-Down' Model of Reading

On the other hand, the top-down model of reading focuses fundamentally on the application of background knowledge (schema) to the reading process, where schema can be defined as "…our pre-existent knowledge of the world" (Cook, 1989, p.69). The top-down model proposes that a reader applies his/her pre-existing knowledge and experiences to help to shape his/her understanding of a given text. Accordingly, from the top-down perspective it can be claimed that reading involves

> "…how the reader's *schemata*, or knowledge already stored in the memory, function in the process of interpreting new information and allowing it to enter and become a part of the knowledge store… it is this interaction of new information with old knowledge that we mean when we use the term comprehension" (Anderson & Pearson, 1988, p.37).

Therefore, the top-down model of reading emphasizes the cultural, linguistic, social, and historical knowledge of the reader, which ultimately shapes how the reader understands or interprets a given text.

However, it is important to note that understanding the process of reading from a 'top-down' approach also has its limitations, as it tends to emphasize and promote the higher level processes involved in reading (such as the application of background knowledge to text). Consequently, because of this emphasis on higher-level processes, this model assumes that learners have already mastered the lower-level skills which are required for successful reading, and

> "[t]he model they promote is an accurate model of the skillful, fluent reader, for whom perception and decoding have become automatic, but for the less proficient, developing reader – like most second language readers – this model does not provide a true picture of the problems such readers must surmount" (Eskey, 1988, p.93).

Thus, Eskey (1988) argues that the use of decoding is equally important as higher-order skills, especially in regards to L2 learners who are learning English, as they have the additional constraint of not having a sufficient amount of vocabulary knowledge in their second language to read fluently and therefore effectively. Moreover, a cross-cultural study conducted by Carrell (1987) indicates that learners who are exposed to texts from 'culturally unfamiliar content', may not necessarily be successful at comprehending a certain text if their background knowledge is not consistent with the text that they are exposed to. The pedagogical implication being that teachers must take into account learners' previous cultural experience in order for learners to be able to access a given text.

3.3 Psycholinguistic Model of Reading

From a psycholinguistic perspective of reading, Goodman (1976) proposes that reading involves the interaction between language and the reader's background knowledge in order to actively construct meaning. Goodman's (1976) study of miscue analysis indicates that reading is a 'psycholinguistic guessing game', where the reader is able to use the least amount of cues to 'guess' or derive meaning

successfully from a given text. In this sense, reading focuses primarily on the ability of the reader to apply strategies such as prediction and the use of context clues to 'guess' the underlying meaning of a text. Thus, this understanding of reading has often been linked to the 'whole language' approach of reading, as the underlying focus is on meaning, rather than on the ability to decode.

The underlying premise of this approach being that in order to read successfully, one needs to be able to successfully derive meaning from text, and thus, reading involves active construction and interpretation by the reader. Without the reader as the interpreter, "[i]t is impossible for script to be more than marks on a surface unless it is used by a conscious human being as a cue to sounded words, real or imagined, directly or indirectly" (Ong, 2002, p.74-75). In this way, implicit within the definition of reading is the implication that the derivation of meaning of a text necessitates some form of human interaction and interpretation. As such, the process of reading can be described as

> "…a psycholinguistic process in that it starts with a linguistic surface representation encoded by a writer and ends with meaning which the reader constructs. There is thus an essential interaction between language and thought in reading. The writer encodes thought as language and the reader decodes language to thought" (Goodman, 1988, p.12).

In this way, reading requires some form of interaction between the reader and the text, as reading is, essentially a meaning-making process. For example, Widdowson (1979) argues that reading is "…regarded not as reaction to a text but as *interaction* between writer and reader mediated through the text" (Widdowson, 1979, p.174). Reading, as an interactive process in this sense (which is distinct from the definition of 'interactive model of reading' below) requires that the reader is able to negotiate and construct ideas related to what the writer initially intended during the writing process (Widdowson, 1979). However, this may not always be possible, as some

texts may have multiple interpretations, and readers interpret a text in reference to their previous experience and knowledge.

In opposition to the 'psycholinguistic guessing game' hypothesis, it has been argued that decoding is essential to the process of reading, as it allows for the reader to be able to verify that his/her 'guesses' are correct or incorrect. In this sense,

> "[r]eading cannot be simply a guessing game. There must be some decoding of the printed text so that the guesses can be confirmed or disconfirmed. Furthermore, decoding must be *taught*. It cannot be expected to materialize as a by-product of intelligent guesswork, though some children are undoubtedly able to work out the rules for themselves, with little formal instruction" (Oakhill & Garnham, 1988, p.97).

Accordingly, there is no doubt that decoding is essential to the successful process of reading; however, comprehension is also equally important. Therefore, the definition of reading must be broadened to encompass both aspects of meaning-making as well as the underlying processes involved in the decoding of text. Where the definition of reading involves being able to 'decode' text, and, ultimately, being able to successfully derive the underlying meaning from the text based on one's existing previous knowledge and experience, as well as to use that knowledge for specific purposes in specific contexts.

3.4 The Interactive Model of Reading

The 'interactive' view of reading, however, takes into account these limitations, and suggests that the process of reading requires the interaction between both higher-level processes (use of background knowledge) and lower-level processes (use of decoding) for 'fluent' reading. Where the concept of 'fluent' reading can be defined as that which enables learners to understand the meaning of the text without being hindered by the lack of efficient decoding skills. In other words, the 'interactive' view of reading can be described as where both the bottom-up and top-down processes occur simultaneously or alternately (Aebersold & Field, 1997). From this

view, therefore, reading involves the interaction of a number of different processes, including automatic recognition, as well as use of background knowledge in order to understand a given text (Grabe, 1988).

Accordingly, from an interactive perspective of reading, Hoover and Gough (1990) hypothesize that the process of reading (R) requires two essential components: 1. Decoding (D); and 2. Linguistic comprehension (L), where R = D x L. Thus, in order to be able to read effectively, one must have adequate knowledge of decoding skills, as well as knowledge of linguistic skills which are required for overall comprehension of text. Consequently, the simple view of reading claims that

> "…decoding is also of central importance in reading, for without it, linguistic comprehension is of no use. Thus, a second central claim of the simple view is that both decoding and linguistic comprehension are necessary for reading success, neither being sufficient by itself" (Hoover & Gough, 1990, p.128).

From this perspective, decoding and comprehension are both equally important for successful reading. However, the 'simple' view of reading also has limitations, as it does not take into account the various other factors which relate to the reading process (factors such as learner's background knowledge, social status, etc.).

3.5 Skills Learners Require for Successful Reading

3.5.1 Vocabulary Knowledge

Moreover, it is important to note that learners who are learning English as a second language may already have some pre-existing knowledge of reading which they bring to the L2 reading process, and this may affect how learners approach the process of reading in the second language. For example, elements such as "…[r]estricted background knowledge, interference from L1, limited proficiency in L2, and L1 reading proficiency all might contribute to such differences" (Verhoeven, 2000, p.313-314). A study conducted by Carrell (1991) further addresses this and

suggests that first language reading experience and second language proficiency both contribute to the success of reading effectively in the second language.

Furthermore, in relation to second language learners, one assumption that is generally made (e.g. by policy-makers) is that L2 learners already have a basic awareness (the language threshold) of word knowledge, and, thus are able to comprehend text effectively. However, the 'Language Threshold' hypothesis theorizes that

> "…L2 readers need to know enough L2 knowledge (vocabulary and structure) so that L1 reading strategies and skills can be used efficiently and effectively to help comprehend the L2 text. If the reader is devoting most of his cognitive resources to figuring out the language of the L2 text, there are few cognitive resources left over for the fluent comprehension processes that would normally support the L1 reader" (Grabe & Stoller, 2002, p.51).

It is, therefore, essential that learners attain enough word recognition and vocabulary knowledge to be able to focus more of their attention on the comprehension of text, rather than merely focusing on decoding. Many young second language learners, however, do not have a sufficient vocabulary base, and this further hinders second language learners' ability to use their background knowledge (knowledge of word meanings) when reading. For example, Nation and Waring (1997) claim that children (aged five) who learn English as a first language have knowledge about approximately 4000 – 5000 word families. It must be taken into consideration that these are merely estimates and are described as a 'conservative rule of thumb' by Nation & Waring (1997). Nonetheless, what these estimates help to exemplify is that there is a lag between first and second language learners in terms of vocabulary growth. Furthermore, Nation & Waring (1997) claim that second language learners can learn vocabulary at a similar rate as first language learners; however, the initial gap between first and second language learners remains. Thus, second language learners are at a greater disadvantage than their first language counterparts, due to

their lack of vocabulary knowledge in the second language. For example, Williams (2004) states that

> "[l]ow levels of vocabulary knowledge, especially in the case of second language readers, have implications for the advice that readers should guess the meanings of unknown words from context: in order to be able to do this, it has been estimated that readers need to know approximately 95 percent or more of the other words in a text" (Williams, 2004, p.583).

Taking this into account, if second language learners do not have the appropriate vocabulary knowledge, then reading by context (reading as a 'psycholinguistic guessing game') would not be possible. Vocabulary knowledge is, therefore, a vital characteristic for successful comprehension and should also be emphasized.

3.5.2 Oral Vocabulary Knowledge

Research also indicates that second language learners require a sufficient oral vocabulary base for reading. For example, Ong (2002) theorizes that "[w]ritten texts all have to be related somehow directly or indirectly, to the world of sound, the natural habitat of language, to yield their meanings. 'Reading' a text means converting it to sound, aloud or in the imagination…" (Ong, 2002, p.8). In relation to second language learners, studies also indicate that learners who have adequate knowledge of oral vocabulary are able to comprehend text more effectively. For example, a longitudinal study conducted by Verhoeven (1990) of Turkish children learning Dutch as a second language during their first two years at school, found that high word recognition and comprehension were highly correlated with oral fluency in Dutch (as a second language). Furthermore, it can be argued that

> "[b]ecause they [L2 learners] have a relatively small vocabulary in the target language compared to their L1 cohorts, L2 learners may have trouble building a body of visual word representations. A visual representation of a word will be constructed only if the word's meaning is known, which is less likely for the L2 learner" (Verhoeven, 1990, p.92).

This research further supports the notion that the connection between oral language and written text is vital, and, in terms of the implications for educational instruction, "[i]n the early stages, children should only encounter written words that they already know orally" (Cameron, 2001, p.137). The reason being that learners will not be able to derive meaning from the text if they do not have any understanding or background knowledge (i.e. oral knowledge) of the words that are being encountered in the text. Thus, based on this evidence, it would be assumed that a focus on vocabulary building would be a prime focus in educational policies.

3.5.3 Phonological Awareness

It is also evident in research that phonological awareness contributes to the acquisition of reading for L1 learners (Share, et al., 1984; Torgesen, et al., 1997). Where phonological awareness can be defined as having "…an awareness of sounds in spoken (not written) words that is revealed by such abilities as rhyming, matching initial consonants, and counting the number of phonemes in spoken words" (Stahl & Murray, 1994, p.221). In addition, phonological awareness of oral language can be seen as key to the development of reading as it allows for "…quick access to oral vocabulary in lexical memory because it is stored in phonological forms…" (Koda, 2005, p.33). On the other hand, it can be argued that second language learners may be predisposed to certain phonological characteristics in their L1 that may not exist in English. However, research that has been conducted with L2 learners, suggests that learners' phonological awareness in their L1 does positively affect reading acquisition in the second language (Lesaux & Siegel, 2003). For example, Chiappe & Siegel (1999) conducted a study related to the reading acquisition of English of Punjabi-speaking children in Canada, and found that phonological awareness skills in the first language do transfer during the acquisition of a second language. Thus, in addition to

a sufficient vocabulary base, phonological awareness (in learners' L1 or L2) can be perceived as a fundamental component in relation to the development and acquisition of reading.

3.5.4 Orthographic Representation of Print

The orthographic representation of print can also affect the development of reading with second language learners. For example, Koda (2005) states that

> "…orthographic knowledge is responsible for facile extraction of lexical information from print. To develop word-recognition competence, children must first become aware that written symbols correspond to speech units, and then learn the specific ways in which symbols are combined to represent spoken words" (Koda, 2005, p.32).

Therefore, orthographic awareness plays a significant role in the development of reading in L1 and L2 learners. Furthermore, research suggests that "…L2 decoding efficiency, in part, is determined by L1-L2 orthographic distance…" (Koda, 2005, p.25). This perspective is commonly referred to as the 'Orthographic Depth Hypothesis' (Katz and Frost, 1992), which states that "…orthographies are more easily able to support a word recognition process that involves that language's phonology. In contrast, deep orthographies encourage a reader to process printed words by referring to their morphology via the printed word's visual-orthographic structure" (Katz and Frost, 1992, p.71). In other words, 'shallow' or 'transparent' orthographies support simple decoding (as letters correspond with sound symbols in an uncomplicated manner). Alternatively, 'deep' or 'less transparent' orthographies support the notion that phonological information can only be derived if an individual possesses stored knowledge of a given word (Koda, 2005). Based on this, it can be claimed that certain languages are more prone to be taught through the method of phonics instruction, as they are more orthographically transparent (i.e. languages that have a straightforward sound-to-symbol relationship). English, on the other hand, is

considered an 'orthographically deep' language, as it has a poor sound-spelling relationship (Williams, 2004). The problem is further exacerbated, as Williams (2004) claims that the English language is

> "…a notoriously mixed system: it is partly alphabetic and phonemic, thus providing guidance on pronunciation in words such as *bat*, *fed*, *hop*. It is also partly morphophonemic, providing information about syntactic and semantic relations such as the past tense morpheme, spelled as *–ed* in *learned*, *looked*, and *loaded*, although pronounced differently, or the plural morpheme spelled as *–s* in *books*, and *balls*, and again pronounced differently" (Williams, 2004, p.578).

In regards to reading acquisition, cross-cultural research conducted by Geva and Siegel (2000) supports this claim and indicates that children who were being taught Hebrew and English at the same time, were more successful at reading the language with a more 'transparent' orthography (Hebrew), than one with a 'deep' orthography (English). In addition, Spencer and Hanley (2003) found that learners who were studying Welsh ('transparent' language) and English ('deep' language) concurrently, were able to acquire reading at a faster rate in Welsh than in English. What these studies help to exemplify is that the orthography of a language also plays a significant role in the acquisition of reading.

3.5.5 Model of Reading for this Study

It is, therefore, evident that reading is extremely complex and there are a variety of processes that need to be taken into account. Accordingly, for my critical study, reading will be understood as an interactive process (See figure 1), which has been adapted from the Interactive Model of Reading originally presented by Rumelhart (1985). In addition to the original model, I have included aspects such as phonological knowledge, contextual knowledge and cultural knowledge, which I believe help to shape the subsequent interpretation of a given text. This framework perceives reading as involving the interaction of the reader's knowledge of orthography, phonology, vocabulary ('bottom-up' processes), culture and context ('top-down' processes).

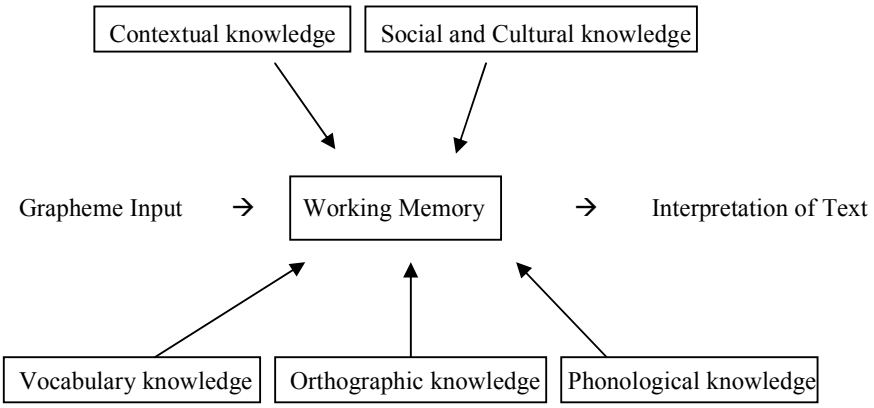


Figure 1: Interactive Model of Reading
Adapted from: Rumelhart (1985)

Thus, this interactive model of reading acknowledges that reading requires the interaction of *both* bottom-up processes, such as decoding skills (including phonological and orthographic awareness) *and* top-down processes (knowledge of context and culture) in order for one to be able to read effectively (where 'effectively' can be defined as the ability to derive comprehensible meaning from printed words).

3.6 Types of Reading Instruction

In terms of the teaching of reading, generally, there are debates surrounding what kind of instruction will provide the most opportunity for the enhancement of learners' reading ability. As can be seen in figure 2, discussions of reading instruction often refer to three types of language instruction: 1. Whole Language approach; 2. Whole Word approach; and 3. Phonics-based approach.

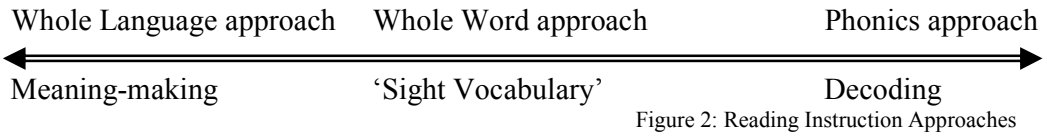


Figure 2: Reading Instruction Approaches

3.6.1 Whole Language Approach

On one end of the continuum exists the 'Whole language' approach, which claims that "…children who learn to read are those who are read to, and the stories and books

that they hear are chosen for their interest and appeal, and not for the sequence and scope of vocabulary and language structures" (Piper, 2003, p.272). In this sense, instruction focuses on immersing learners in language which is focused on meaning-making, rather than on decoding skills. For example, during instruction, teachers can employ the use of story books to engage learners in active discussions in the hope that learning will be more meaningful for learners. The underlying premise of the whole language approach is that

> "[l]anguage is actually learned from whole to part. We first use whole utterances in familiar situations. Then later we see and develop parts, and begin to experiment with their relationship to each other and to the meaning of the whole. The whole is always more than the sum of the parts and the value of any part can only be learned within the whole utterance in a real speech event" (Goodman, 1986, p.19).

In support of this claim, in terms of language acquisition of young children, Wray (2002) claims that children acquire some types of language as formulaic 'chunks', rather than as isolated words. For example, "…language that is used largely for expressive purposes, to effect interactional goals (e.g. directives, requests) or for social reasons, is more likely to be learned whole" (Wray, 2002, p.117). From this perspective, a whole language approach to reading is justified, as it corresponds with how language is acquired. A whole language approach, therefore, focuses on allowing learners to derive meaning from text, as well as the application of higher-level processing skills such as 'prediction', where reading is perceived as a 'psycholinguistic guessing game'.

On the other hand, it can be argued that learners who do not have the basic ability to decode text will not be able to successfully derive meaning from text, unless they have acquired some level of automatic word recognition (Grabe & Stoller, 2002). Accordingly, the interactive-compensatory model (Stanovich, 1980) of reading states that if learners demonstrate a weakness in either the higher-level processes or lower-

level processes, the result would be that the reader would rely more on the processes that he/she demonstrates more strength in. For example, if a reader is not efficient in word recognition or decoding (bottom-up skills), then he/she would rely more on the use of prediction and 'guessing' from context (reading as a psycholinguistic guessing game). However, proponents of the 'whole language' approach assume that

> "…contextual dependency is always associated with good reading. In fact, the word recognition skills of the good reader are so rapid, automatic, and efficient that the skilled reader need not rely on contextual information. In fact, it is poor readers who guess from context – out of necessity because their decoding skills are so weak" (Stanovich & Stanovich, 1999, p.19).

Thus, one of the major limitations of the whole language approach is the assumption that all 'good' readers rely on the use of context clues when reading; however, the use of context is used by both skilled and beginning readers (but in different ways).

3.6.2 Whole Word Approach

As a response to the whole language approach, one way of improving automatic word recognition is known as the 'Whole word' or 'look-and-say' approach to reading, which focuses on the teaching of 'sight-words' to learners, and

> "[i]n this approach, the overall shape and gross visual features of the words are stressed, not its component letters. Children are taught to recognize a small set of words, each of which is displayed singly on a card called a *flashcard*… Once children have built up an adequate *sight vocabulary* they progress to the first reading book in the scheme, in which almost all the words are taken from flashcards" (Oakhill & Garnham, 1988, p.87).

With this approach, the focus is on improving learners' ability to automatically recognize words by sight, without having to expend too much energy on the decoding of words, thus allowing for a greater focus on the meaning of text. However, a critique of this technique of teaching is that this process of reading can be viewed as highly inefficient, as it requires learners to memorize large amounts of vocabulary words without having the ability to decode words that are new or unknown to the reader (Oakhill & Garnham, 1988). Thus, the ability to decode is perceived as an

essential skill which is required for successful, skilled reading, as it allows for learners to read unfamiliar words more efficiently. In addition, it can be claimed that function words (e.g. 'for' and 'was') are more easily "…learnt through multiple encounters in contexts of use, rather than separated from other words on a card" (Cameron, 2001, p.148). In this way, a focus on 'sight word' recognition provides a method of instruction which is decontextualized and therefore, less meaningful for learners.

3.6.3 Phonics-Based Approach

On the other end of the continuum, a phonics-based approach focuses primarily on the teaching of decoding skills, often in a 'systematic' manner. Systematic phonics refer to phonics programmes where "…a planned set of phonics elements is taught sequentially…" (Ehri, et al., 2001, p.394). From this perspective, it is assumed that learning must proceed in a linear manner, and the decoding skills are to be taught consecutively, building upon the previous skills acquired. However, within this view of systematic phonics, distinctions also exist in how phonics should be taught (e.g. 'analytically' or 'synthetically'). For example, analytic phonics approaches

> "…begin with a word that a child already knows and breaks this word down into its component parts. For example, a teacher might begin an analytic phonics lesson by writing the word bed on the board and saying something like 'the sound in the middle of the word bed makes an /e/ sound, which we call the short e.' The teacher might then say some other words aloud, such as hen, met, bat, run, and rest, and ask students to raise their hands if the middle sound of the word was a short e sound. This instruction might be followed by having students read a series of words on the board, each containing a short e sound, and then having students complete a worksheet…" (Stahl, et al., 1998, p.344).

In this way, learners are being exposed to a word, and then work towards understanding how it is constructed, and can, therefore, be referred to as a 'whole-to-part' method of instruction (Ehri, et al., 2001). Accordingly, proponents of the 'analytic' phonics method of instruction (Goswami, 2005), argue that analytic phonics

can help learners to recognize similarities between words that rhyme, and is therefore, more suited towards the teaching of English – which is an orthographically deep language.

Conversely, 'synthetic' phonics programmes often include instruction where

> "…children are systematically taught the phonemes (sounds) associated with particular graphemes (letters)… In reading, individual phonemes are recognized from the grapheme, pronounced and blended together (synthesized) to create the word. For example, when encountering an unknown single-syllable word such as /*h*/*e*/*n*/ the child would sound out its three phonemes then blend them together to form *hen*" (Lewis & Ellis, 2006, p.4).

As a result, synthetic-phonics programmes focus primarily on teaching literacy skills related to 'bottom-up' processes, more specifically – decoding skills. Since this view of reading focuses primarily on bottom-up skills, Newman (2006) argues that this allows for 'literacy' to be easily measured, as literacy would be measured by how 'effectively' one is able to decode words (the more words one is able to decode = the higher the 'literacy' of the person). Furthermore, Newman (2006) argues that

> "…an exclusive concern with decoding ignores the fact that reading is used primarily as a tool and not as an end in itself. Many teachers, for instance, are familiar with children who can demonstrate the ability to decode by reading aloud but cannot make any use of the information contained in what they are reading. To call such children 'literate' seems counterintuitive" (Newman, 2006, p.246).

Thus, to simply rely on a view of reading which focuses solely on the ability of learners to decode text is highly superficial, as this does not take into account the various processes which are involved in the underlying definition of reading itself (reading for purposes of meaning-making). Therefore, it can be claimed that "[l]anguage must be studied in process. Like a living organism it loses its essence if it is frozen or fragmented. Its parts and systems may be examined apart from their use but only in the living process may they be understood" (Goodman, 1988, p.14). As such, a fragmented approach to teaching reading (a phonics approach) can be

considered to be incomplete, as it does not allow learners to focus fully on the processes involved in reading.

Moreover, in relation to teaching reading to second language learners, the concept of a phonics-based approach assumes that learners already have sufficient vocabulary knowledge in the language, and therefore,

> "[t]he question for us is whether phonics rules can help foreign language readers to identify unfamiliar words. The use of phonics assumes that once readers know how a word is pronounced, they will associate it with the spoken word and therefore understand it. But from the intermediate stage at least, the new words that students meet in texts are usually not words they have already heard spoken. So working out how a word might be pronounced is not going to result in understanding" (Nuttall, 1996, p.77).

Therefore, Smith (1985) claims that in order for a phonics-based approach to be effective, one needs to have the vocabulary knowledge of the word before attempting to decode. In addition, it can be argued that the notion of teaching phonics itself is 'unnatural', as research indicates that "…despite our working knowledge of phonemes, we are not naturally set up to be consciously aware of them… The deep and automatic encoding of phonemes is the product of the fact that we know them so well, that we have overlearned them even at a very tender age…" (Adams, 1990, p.66). The result being that comprehension and meaning-making are considered more important than the ability to decompose words into individual phonemes.

Nevertheless, according to the interactive model above (See Figure 1), which shall be the perspective taken in this critical study, *both* decoding and comprehension are believed to be equally important to the process of successful reading. In terms of instructional implications, however, the following questions arise: what do educational policies emphasize in regards to the teaching of reading, and what research evidence is used to support the claims that the subsequent form of instruction (e.g. synthetic phonics, analytic phonics, whole language, or whole word approach) is the most effective?

Chapter 4: How Literacy is Presented in Policy

Taking into consideration the vast amount of research which has been conducted in the field of reading and literacy, it is important that policy-makers take into account many factors and complexities that are associated with the notions of literacy and reading. Accordingly,

> "[t]he political task is then a more complex one: to develop strategies for literacy programmes that address the complex variety of literacy needs evident in contemporary society. This requires the policy makers and the public discourses on literacy to take greater account of people's present skills and their own perceptions; to reject the dominant belief in uni-directional progress towards western models of language use and of literacy; and to focus upon the ideological and context-specific character of different literacies" (Street, 1995, p.24).

Based on this, it would be expected that policy-makers and governments take into account learners' pre-existing notions of literacy, and, therefore, would not impose a homogeneous construct of literacy on an essentially heterogeneous society.

Consequently, many policies do not take into consideration the variable nature of literacy; but, rather, set standards for teachers which assume that all learners are capable of attaining a standard/satisfactory level of proficiency on state academic exams. For example, according to the 'No Child Left Behind Act of 2001' (NCLB) which has been implemented in the United States of America, it is claimed that

> "…all children have a fair, equal, and significant opportunity to obtain a high-quality education and reach, at a minimum, proficiency on challenging State academic achievement standards and state academic assessments. This purpose can be accomplished by… meeting the educational needs of low-achieving children in our Nation's highest-poverty schools, limited English proficient children, migratory children, children with disabilities, Indian children, neglected or delinquent children, and young children in need of reading assistance…" (U.S. Department of Education, 2002, Sec. 1001).

However, even though the No Child Left Behind Act claims to create 'equal educational' opportunities for all students, it overlooks the fact that L2 learners have pre-existing knowledge of language, and instead, promotes monolingualization. In other words, the NCLB Act

> "…homogenizes English learners' backgrounds and educational needs, assuming that their communities are willing and even eager to relinquish their own histories, languages, cultural values, and decision-making prerogatives to achieve *NCLB*'s version of success: English language proficiency and academic success at a par with that of mainstream students" (Meyer, 2007, p.213-214).

Thus, instead of taking into account learners' existent literacy and cultural knowledge, learners are expected to be able to acquire the English language in order to gain 'equal' status to 'mainstream' students. In addition, the 'Act' relies heavily on standardized testing as a means of measuring learners' literacy proficiency, and teachers and individual schools are held accountable if learners do not meet the 'standard' literacy rates; the implication being that entire schools may be re-staffed in order for schools to achieve expected 'standards' (Meyer, 2007). It can, therefore, be argued that although this 'Act' claims to provide 'equal opportunities', it is exclusive in nature (does not take into account linguistic and cultural diversity), and requires that second language learners rapidly acquire literacy in English which is measured through standardized English testing.

In this way, policies tend to neglect the fact that many learners already have literacy knowledge in a second language, and learners' L1 is often perceived as a hindrance to the learning of a second language, and policies are created in order to 'aid' second language learners to adopt the dominant language (often English). For example, Wiley and Lukes (1996) discuss the dominant ideological perspectives in the United States of America, and claim that policy is often "…intended to prescribe rapid transition out of LI instruction into English-only instruction – often resulting in the eventual loss of the L1" (Wiley & Lukes, 1996, p.511). This perspective often does not consider learners' first language abilities, but, rather, focuses on the rapid acquisition of English (as with the NCLB Act).

Moreover, the concept of literacy can be claimed to be used by policy-makers in relation to increasing literacy 'standards' (at the local level – the school; or the global level – a country as a whole). For example, in the United Kingdom,

> "Literacy is at the heart of the drive to raise standards in schools… in 2002, 80% of 11-year-olds [were] expected to reach Level 4 or above in the Key Stage 2 English tests… This report set out a National Literacy Strategy designed to raise standards of literacy in all primary schools in England" (Department for Education and Employment, 1998, p.2).

In this sense, the concept of literacy is being directly advocated for political purposes, where the government is promoting the teaching of literacy to improve the literacy 'rate' of the country, with English being the dominant language. Therefore, it is evident that "Literacies are politically constructed, whether explicitly or implicitly, as specific language competencies. In the field of ELT, literacies are focused on English. The position of English as a global language confers considerable linguistic capital on the fluent English speaker" (Lotherington, 2007, p.893). It can further be claimed that, since English is promoted by policy-makers and governments, educational policies can be perceived as active agents of 'linguistic genocide' (Skutnabb-Kangas, 2000). The teaching of English, from this view, is perceived as a 'remedy' which acts to 'cure' second language learners by compelling them to adopt the dominant language and cultural norms in a given society. Accordingly, it is argued that because of societal pressures imposed on learners at the school level, learners are forced to change their identities and assimilate into the more dominant language and culture quickly, which "…in fact means that '**children from one group have been forcibly transferred to another group**' – and *this is part of UN's definition of genocide*" (Skutnabb-Kangas, 2000, p.115). Thus, it can be claimed that language and culture are so interconnected – if policies are only emphasizing the teaching of English, they may also be assuming that people will eventually assimilate culturally. This can also

be perceived as a form of 'linguistic imperialism' (Pennycook, 2007), where by promoting the English language, this suggests that English is superior to other languages, and the implication being that

> "…English helps to produce and maintain inequitable global power relationships. This is of course a harder case to make on this global scale, though it is certainly possible to see, for example, how the promotion of English and the global marketing of textbooks continually reproduce a cycle of dependency" (Pennycook, 2007, p.18).

On the other hand, it can be argued that this view is highly extreme, and languages and cultures are not always so easily swayed by the 'dominant' forces, but in fact, can influence changes on the English language and can create 'hybrid' forms of the language. In this way, "[h]ybridity denies that the spread of English wipes out other languages and cultures, providing evidence instead of how resilient and adaptive languages and cultures are to intermingling" (Joseph, 2004, p.360-361). From this perspective, languages are considered dynamic entities and are in part created by the experiences of the people who constitute the society; thus, creating a situation where languages are not always completely submissive.

4.1 Letters and Sounds: Principles and Practice of High Quality Phonics

In the United Kingdom, the Primary National Strategy has advocated the use of a synthetic phonics-based programme known as the 'Letters and Sounds' programme created for use with young learners in Key Stage 1. The Department for Education and Skills (2007) states that "Letters and Sounds is designed as a time-limited programme of phonic work aimed at securing fluent word recognition skills for reading by the end of Key Stage 1…" (Department for Education and Skills, 2007, p.3). To make such a claim assumes that all learners who are involved in the programme are able to secure sound phonemic awareness by the end of Key Stage 1; however, this may not necessarily be possible, as classrooms consist of a variety of

different learners who approach learning in a number of ways. In addition, it is claimed in the Letters and Sounds programme that "[h]igh quality phonic teaching can substantially reduce the number of children at risk of falling below age-related expectations for reading" (Department of Education and Skills, 2007, p.6). However, no research-based evidence is provided in relation to this particular claim. For the remainder of the Literacy Strategy document, the majority of research is in reference to the Rose Report, which shall also be examined.

4.2 The Rose Report

The 'Rose' Report (sponsored by the Secretary of State for Education for England) highly advocates the use of a synthetic phonics programme for teaching reading, which uses the Johnston & Watson (2005) study (Clackmannanshire study) as its primary source of research evidence. The Review claims that

> "[d]espite uncertainties in research findings, the practice seen by the review shows that the systematic approach, which is generally understood as 'synthetic' phonics, offers the vast majority of young children the best and most direct route to becoming skilled readers and writers" (Rose, 2006, p.4).

It is important to note that the Letters and Sounds policy in the United Kingdom is primarily based on research which itself claims that the findings in relation to synthetic phonics are 'uncertain'. Therefore, to make the claim that synthetic-phonics is the 'best' method of instruction is highly presumptuous. In addition, the Review argues

> "…strongly for the inclusion of a vigorous, programme of phonic work to be securely embedded within a broad and language-rich curriculum… In practice, this means teaching relatively short, discrete daily sessions, designed to progress from simple elements to the more complex aspects of phonic knowledge, skills and understanding" (Rose, 2006, p.16).

By stating that a synthetic phonics programme is 'discrete', this essentially contradicts the claim that phonics work can be 'securely embedded within a broad and language-rich curriculum'. In this sense, the language which is being used in the Report can be

argued to be "…cunningly worded, politically motivated, dogmatic and dictatorial…" (Hynds, 2007, p.271-272). Additionally, it must be noted that the language which is being used in the review is masking the fact that a synthetic-phonics based approach is a highly decontextualized method of instruction. Accordingly, Wyse & Styles (2007) argue that "[t]he teaching of reading through synthetic phonics strongly emphasizes discrete teaching of phonemes and graphemes decontextualised from sentences or whole texts" (Wyse & Styles, 2007, p.37-38). Furthermore, Wyse & Styles (2007) claim that the Rose Report itself was not 'representative' in its findings, but rather,

> "…as part of the Rose enquiry, HMI found it necessary to visit only 10 schools (pre-judged as 'representative of best practice in the teaching of phonics work')… in constructing an evidence base to legitimise marked changes in reading pedagogy" (Wyse & Styles, 2007, p.36).

Consequently, it can be claimed that the Review may not be completely 'objective' in its claims, and therefore, relevant research in relation to synthetic phonics needs to be examined in more depth.

Chapter 5: Research on Phonics and Second Language Learners

A sample of research studies are reviewed in this critical study, and for each of the individual studies, the underlying research questions are posed:

1. Does Synthetic phonics instruction enable learners to make better progress in ***reading and identifying individual words*** compared to (a) Analytic phonics instruction; (b)Whole Language instruction; or (c) Regular classroom Instruction (no phonics instruction)?

2. Does Synthetic phonics instruction enable learners to make better progress in ***reading comprehension*** compared to (a) Analytic phonics instruction; (b) Whole language instruction; or (c) Regular classroom Instruction (no phonics instruction)?

For the purposes of this critical study, three forms of instruction will be considered in order to determine whether or not a synthetic phonics-based approach is 'effective' for second language young learners: 1. Synthetic Phonics versus Analytic Phonics; 2. Synthetic Phonics versus a Whole Language Approach; and 3. Synthetic Phonics versus Regular Classroom Instruction (no phonics intervention).

5.1 Searching and Screening

Searches were conducted in relation to the topic of synthetic phonics, and the corresponding results were collected from the ERIC (Education Resources and Information Center) and PsychINFO (Psychological literature) databases. The key words that were searched in both databases were: *Phonics, Synthetic Phonics, Synthetic Phonics Instruction, ESL and Phonics, Second language and phonics, EAL and phonics, ESOL and phonics, Analytic Phonics, Whole Language and Phonics Instruction,* and *Preventing Reading Failure*. The results from each of these searches were then screened using the inclusion and exclusion criteria, and only articles that fully met the inclusion criteria were included in my analysis (See Appendix A).

Inclusion Criteria

Research articles that satisfied the following criteria have been included in my analysis:

- Published between the years 1998-2008
- Peer-reviewed
- Focuses on the teaching of Synthetic Phonics in English to Young Learners (aged 4-12) who are learning English as a Second Language
- Compares Synthetic Phonics to (a) Analytic Phonics; (b)Whole Language; or (c) Regular classroom instruction (no phonics instruction)
- Includes measurements of Pre- and Post- intervention

Exclusion Criteria:

Articles have been excluded from my analysis for the following reasons:

- Written before 1998
- Not peer-reviewed
- Does not focus on the teaching of Synthetic Phonics in English
- Does not have any comparisons between different types of phonics interventions
- Does not include measurements of Pre- and Post- intervention
- Focuses primarily on Phonemic awareness rather than Phonics Instruction

5.2 Included Studies (See Appendix A)

Five studies fully met my Inclusion Criteria, all of which focus on second language learners who were positively screened for demonstrating significant difficulties with reading: Denton, et al. (2004); Foorman, et al. (1998); Stuart (1999); Stuart (2004); Torgesen, et al. (1999). Studies that discussed intervention programmes with both L1 and L2 simultaneously also qualified for analysis in my study because they met my inclusion criteria (See Table 1). In addition, the 'Clackmannanshire' study (Johnston & Watson, 2004; Johnston & Watson, 2005), has

also been included in my analysis (even though this study does not fully meet my inclusion criteria as the focus is on L1 learners), because this study has been highly influential in the 'Rose Report', which is the basis of the National Literacy Strategy in the United Kingdom.

5.3 Study Summaries of Included Research Studies

The summaries of the included studies have been listed in Table 1, which includes information relating to the subjects of the study, the type of intervention, the length of intervention, method of testing, and the subsequent findings of each study.

Table 1: Study Summaries

Study	Subjects	Type of Instruction/ Intervention	Length of Intervention	Method of Testing	Findings
Denton, et al. (2004) Texas, United States of America	L2 93 Grade 2-5 (ages 7-12) Bilingual Students with Spanish as their First Language and who were having trouble reading in English Grade 2: 22 students Grade 3: 37 students Grade 4: 28 students Grade 5: 6 students All students were Hispanic	1. 'Read Well' series (Synthetic Phonics) 2. 'Read Naturally' series (repeated reading, with contextualized vocabulary and comprehension instruction) 3. Regular Classroom Instruction	10 week Intervention 40 min. sessions, 3 times a week for 10 weeks	Woodcock Reading Mastery Tests-Revised sub-tests: Word Identification Word attack Passage Comprehension	"The Read Well intervention resulted in improvement in bilingual students' ability to read English words. Specifically, students in this program outperformed their non-tutored classmates in context-free word reading" (p.300) "Read Well tutoring had a moderate effect on word identification and a moderately low effect on non word reading" (p.300) "Even a small amount of systematic English phonics instruction may have significant effects on decoding abilities of ELLs" (p.301) Did not improve in comprehension ability - researchers justified this by stating that learners need more instruction to become 'automatic' decoders and this was not possible in the short intervention period
Foorman, et al. (1998) Houston, Texas United States of America	L1 and L2 285 First and Second Grade Students "…60% African American, 20% Hispanic, and 20% White" (p.39)	1. 'Direct' synthetic phonics instruction (referred to as DC) 2. Less direct instruction 3. Indirect instruction (Regular Classroom Instruction)	90 min. language arts instruction 1 school year	Peabody Picture Vocabulary Test-Revised Letter Word & Word Attack subtests of the Woodcock-Johnson Torgesen-Wagner battery Wechsler Intelligence Scale for Children-Revised	"Children who were directly instructed in the alphabetic principle improved in word-reading skill at a significantly faster rate than children indirectly instructed in the alphabetic principle through exposure to literature" (p.51) Study indicated that with "…culturally and linguistically diverse children, greater changes in phonological processing skills and word-reading ability occurred when these children were provided a curriculum that included explicit instruction in the alphabetic principle" (p.51)

Johnston & Watson (2004) Clackmannanshire, Scotland	L1 Learners 92 5-year old children No children with English as a Second Language	1. Synthetic Phonics 2. Analytic Phonics (taught gradually with whole word/'look-and-say' approach simultaneously) 3. Analytic Phonics plus phonological awareness training	16 week intervention 20 min. sessions a day for 16 weeks First post-test: 10 weeks from the start of the intervention Second post-test: 3 months after intervention Third post-test: 9 months after intervention	British Picture Vocabulary Scale Letter Knowledge Schonell Spelling Test Clay 'Ready to read' word test The British Ability Scales Word Reading Test The Primary Reading Test (Cloze procedure) Non word and Irregular word Reading Tests Phoneme segmentation (Yopp-Singer test)	"…at the first post-test that synthetic phonics was more effective in developing reading, spelling and phonemic awareness ability than both analytic phonics, and analytic phonics with additional phonological awareness training" (p.351) "Reading comprehension ability was also measured at this time, when all of the children had undergone the synthetic phonics programme, and was found to be equivalent for all groups. Synthetic phonics programmes generally involve teaching letter sounds more rapidly than analytic programmes" (p.351) "…synthetic phonics was a more effective approach to teaching reading, spelling and phonemic awareness than analytic phonics" (p.351)
Johnston & Watson (2005) Clackmannanshire, Scotland	L1 Learners, including learners from 'disadvantaged backgrounds' 300 primary 1 children (aged 5)	1. Synthetic phonics instruction 2. Analytic phonics instruction (taught gradually with whole word/'look-and-say' approach simultaneously) 3. Analytic plus phonological awareness training	16 week Intervention 20 min. sessions a day for 16 weeks Accumulation of data collected over 7 years	British Picture Vocabulary Scale Letter Knowledge Clay 'Ready to read' word test The British Ability Scales Word Reading Test The Primary Reading Test	"The synthetic-phonics-taught group were reading words around 7 months ahead of the other two groups (and were around 7 months ahead for their chronological age), and were spelling around 8 to 9 months ahead of the other groups" (p.2)

Stuart (1999) United Kingdom	L1 and L2 112 five-year olds (Key stage 1) 96 of which were Second Language Learners	1. 'Big Books' Instruction (whole language approach) 2. 'Jolly Phonics' instruction (synthetic phonics approach)	12-week intervention Post-test (1 year later)	Letter-sound recognition test British Ability Scales (BAS) Single Word Reading Test Reading single words (e.g. CVC and non-words) Neale Comprehension test Phoneme Segmentation	"The experimental programme accelerated children's acquisition of phoneme awareness and of phonics knowledge, and their ability to apply these in reading and writing. In the year following intervention both groups made comparable progress in most areas" (p.587)
Stuart (2004) United Kingdom	L1 and L2 101 seven-year olds 85 of which were Second Language Learners	1. 'Big Books' instruction (whole language approach) 2. 'Jolly Phonics' Instruction (synthetic phonics approach)	Follow-up Study from original study (Stuart, 1999)	British Abilities Scales reading test Neale Comprehension test Phoneme Segmentation Initial sound segmentation Letter-sound recognition	"Lasting influences of early phoneme awareness and phonics teaching on phoneme awareness, grapheme phoneme correspondence knowledge, word reading and spelling were found. Part of the previously untrained group had now received structured phonics teaching, and were therefore treated as a third (late trained) group" (p.15) "Early and late-trained groups showed similar levels of attainment and similar cognitive processing patterns, which were different from the untrained group. However, there were no influences of training on reading comprehension, self-concept or oral vocabulary" (p.15-16)
Torgesen, et al. (1999) United States of America	L1 and L2 (predominately L1) 138 Kindergarten to Grade 2 students (aged 4-7) "…71.9% White, 26% African American, 0.6% Hispanic, and 1.5% Asian" (p.581)	1. Phonological Awareness and Synthetic Phonics (PASP) 2. Analytic Phonics (referred to as EP) 3. No treatment control 4. Regular Classroom instruction	Four 20-min sessions of instruction per week for 2 and a half years, beginning in the second semester of kindergarten	Woodcock Johnson Psycho-Educational Battery Revised Boston Naming Test Wechsler Intelligence Scale Gray Oral Reading Test-Ill (Word Attack, Word Identification, and reading comprehension)	"The most phonemically explicit condition produced the strongest growth in word level reading skills, but there were no differences between groups in reading comprehension" (p.579) Found no evidence that children in the three instructional groups were reliably different from one another in terms of comprehension

5.4 Synthetic Phonics versus Analytic Phonics

Studies conducted by Torgesen, et al. (1999), and Johnston & Watson (2005) both found that learners who were exposed to a synthetic-phonics programme improved significantly in their word reading abilities. For example, Torgesen, et al. (1999) found that in regards to the word attack and word identification testing, students in the synthetic phonics (PASP) group scored 99.4 and 98.2 respectively, compared to those in the analytic phonics (EP) group who scored 86.7 and 92.1. According to Torgerson, et al. (2006), EP (Embedded Phonics) in this particular study, is considered a form of analytic phonics because the children in this programme were "…consistently and explicitly shown how they could combine what they knew about the 'sounds' in words with what they knew about the meaning of the sentence in order to help them identify individual words" (Torgesen, et al., 1999, p.582). Thus, for purposes of this critical study, EP shall be considered as a form of analytic phonics. In addition, Johnston & Watson (2005) conducted a longitudinal study describing the effects of analytic phonics (which is taught gradually with the whole word/'look-and-say' approach) and synthetic phonics. The subsequent results of the Johnston & Watson (2005) study indicated that word reading did improve with synthetic phonics instruction, and that "…the synthetic-phonics-taught group were reading words around 7 months ahead of the other two groups (and were around 7 months ahead for their chronological age)…" (Johnston & Watson, 2005, p.2). From this, it can be deduced that synthetic-phonics is more effective in terms of individual word reading; however, in terms of reading comprehension, both studies indicate that significant evidence does not exist in terms of an improvement of reading comprehension.

5.5 Synthetic Phonics versus Whole Language Approach

On the other hand, the study conducted by Stuart (1999) focused on the difference between synthetic phonics ('Jolly Phonics' programme), and the whole language approach (through the use of 'big books'). It was found that learners had improved significantly in terms of phonemic awareness and decoding, as well as their ability to read individual words. A follow-up study by Stuart (2004) further confirmed that the effects of this intervention were long-term and learners had sustained the ability to read individual words. However, in relation to overall reading comprehension, again, it was found that the improvement was not significant. For example, the findings suggested that "…JP [Jolly Phonics] children scored significantly better for reading accuracy than the BB [Big Book] children, and differences in reading comprehension in favour of the JP group just failed to reach statistical significance…" (Stuart, 1999, p.602). Thus, the findings again demonstrate that although there is improvement in relation to word identification and accuracy, the effect on reading comprehension is not significant.

5.6 Synthetic Phonics versus Regular Classroom Instruction

Studies by Foorman, et al. (1998), and Denton, et al. (2004), also found that with direct synthetic phonics intervention, learners were able to enhance their ability to decode and read individual words. In regards to the study conducted by Denton, et al. (2004), all of the students were second language learners who spoke Spanish as their first language. Three groups of students were compared in the analysis: 1. students in the 'Read well' programme (involved synthetic phonics instruction); 2. students in the 'Read Naturally' programme (involved repeated reading of English text to develop oral reading fluency); and 3. students receiving no intervention or tutoring (i.e. received regular classroom instruction). Students in all of the groups were administered tests in relation to English word reading, word attack, and passage

comprehension. The results indicated that in terms of word identification, "…tutored students gained an average of 4.06 standard score points during the 10-week intervention…" (Denton, et al., 2004, p.299). In addition, it was found that in regards to word decoding, the students in the 'Read Well' programme, who received explicit phonics instruction experienced the most improvement; however, there was no improvement in relation to reading comprehension in all three groups.

Foorman, et al. (1998) also found that children who received explicit synthetic phonics instruction improved significantly in their word reading abilities than those who received indirect or no phonics instruction (regular classroom instruction). In opposition to the other studies, Foorman, et al. (1998) claimed that some improvement did occur in terms of reading comprehension, but, again, the results were not statistically significant. For example, it was found that the

> "…direct instruction group approached national average on decoding (43rd percentile) and passage comprehension (45th percentile) compared with the IC-R [regular classroom instruction] group's means of 29th percentile and 35th percentile, respectively… Although the differences in decoding skills were robust, mean differences on the Passage Comprehension test did not meet the critical value of alpha adopted for this study" (Foorman, et al., 1998, p.51).

Thus, all of the studies indicate that although word identification and individual word reading does improve with synthetic phonics instruction, this does not necessarily mean that these effects will improve reading comprehension.

5.7 How the Research relates to the definition of Literacy and Reading

It is evident that the included studies that have been reviewed in this critical study all claim that a synthetic phonics programme can help to improve the ability to decode and identify isolated words, but there is no conclusive evidence to support that reading comprehension is improved. As such, since the definition of reading includes both the ability to decode and comprehend text for specific purposes, it is clear that

there is a need for further research in relation to *both* comprehension and the decoding ability of second language learners.

Moreover, it is important to take into account that all of the studies which have been reviewed in this critical study focus primarily on standardized testing as the primary method of testing (See Table 1). For example, the Boston Naming test is one form of standardized testing which has been employed in some of the included studies (e.g. Torgesen, et al., 1999). During administration of the Boston Naming test, "…respondents are asked to name each object and, when unable to do so, are provided with semantic and/or phonemic cues. Correct identification of a picture without cueing or with only a semantic cue is awarded one point" (Kohnert, et al., 1998, p.427). In this way, learners are assessed on their ability to name objects from a number of different pictures. However, based on the literature related to literacy, it is evident that second language learners have language experiences in more than one language, and cultural factors may prevent learners from being able to name objects effectively. Bialystok & Craik (2007) discuss the use of the Boston Naming test with adult second language learners, and conclude that the reason why bilingual learners may be able to name some items in their L1 but are unable to do so in their L2 (English) is because "…bilinguals may live in two rather separate cultural milieux (e.g., work and home) with words appropriate to each setting known only in the language of that setting" (Bialystok & Craik, 2007, p.211). Although Bialystok & Craik (2007) focus on standardized testing with adults, this study can help to provide valuable insight into the underlying processes involved in word naming tasks with learners of any age. The resulting implications highlight the importance of using a variety of assessment procedures which take into account different cultural and linguistic characteristics that individuals possess.

In addition, it is evident that the majority of the included studies in this critical study focus mainly on individual word testing (word identification) in a decontextualized manner. This helps to further support the claim that

> "[s]tandardized reading tests assume that reading can be subdivided neatly into sub-skills that can easily be sequenced and measured. Learning to read means scoring better on tests of these sequenced bits and pieces: letter-sound relationships, isolated words, abstract definitions, fractured sentences, and paragraphs pulled out of the middle of longer coherent texts" (Goodman, 1986, p.35).

As a result, standardized language assessment perceives reading as made up of discrete skills which can be isolated and tested, and in this way, does not take into account the social and cultural nature of reading. Thus, Nettles (2006) claims that teachers should take into consideration that state assessments and standards do affect *what* to teach in the classroom, but, ultimately, the teacher has the power to choose *how* to teach in his/her own classroom, in order to best meet the needs of the learners in that particular setting.

Furthermore, regardless of the inconclusive nature of research findings, the 'Clackmannanshire study' (Johnston & Watson, 2005), for example, has been widely cited and used by educational ministers to promote the implementation of a synthetic phonics programme in the United Kingdom. Consequently, it is important to identify how policy-makers have used research in order to shape national educational policies and the national curriculum. It is evident that Scotland and England have responded quite differently to the way in which phonics should be implemented as a result of the research findings. For example, Ellis (2007) notes that England included synthetic phonics in their national curriculum, while Scotland decided that further research must be conducted in the field of synthetic phonics, especially in regards to the effects on reading comprehension, before any conclusive policy changes could be made. Ellis (2007) further argues that one reason why the Scottish government reacted less

dramatically to the results of the Johnston & Watson (2005) study was because Scotland does not have a "…central, legally enforced national curriculum" (Ellis, 2007, p.285). Therefore, teachers in Scotland were given more control over their local contexts and were given the opportunity to adapt materials to their own context and needs of their individual learners. On the other hand, England responded by integrating the use of a Synthetic Phonics programme into the national curriculum, which has had vast implications for both students and teachers. Marshall (2005) hypothesizes that the reason for such a dramatic response to the Clackmannanshire (Johnston & Watson, 2005) study in the United Kingdom is because

> "…policy-makers have a vested interest in accepting the pseudo-scientific claims of precision… [and] [e]ven when research adopted by government policy-makers has complexity built in at the core, the desire for clarity and mass distribution of ideas can mean that findings are only partially adopted and are oversimplified to the point of being unrecognisable" (Marshall, 2005, p.105).

The implication being that education is viewed as a commodity which can be mass produced and sold to teachers in a simplified manner, which can sometimes lead to the negation of the underlying findings representative in research. Although this claim may not be fully generalizable, it does highlight the fact that educators should adopt a critical stance towards educational policies, and recognize that different countries can use and manipulate research in order to meet their own means.

Chapter 6: Limitations, Further Implications, and Conclusion

6.1 Limitations

One of the major limitations that I found when writing this critical study was that I could only find five studies which fully met my inclusion criteria (e.g. that dealt with second language young learners and the implementation of a synthetic phonics programme). The result being that the studies that I did find, dealt with both second language learners and first language learners simultaneously (See Table 1). Therefore, the included research studies in this critical study did not make an explicit distinction between the effects of synthetic phonics instruction on first language learners and second language learners. In addition, it was not possible to locate a study which compared the implementation of a whole word approach to synthetic phonics with second language learners. The only study that did compare the implementation of a whole word/'look-and-say' approach to synthetic phonics was the Johnston & Watson (2005) study; however, in this study of L1 learners, the analytic phonics and whole word group were treated as the 'analytic' phonics group, rather than distinguishing between the two different approaches. Moreover, due to the lack of research done in relation to second language learners and synthetic phonics, it was not possible to locate studies which had a consistent length of intervention (See Table 1); thus resulting in the inclusion of a number of studies with varied periods of intervention.

6.2 Further Implications

In terms of further implications, it is apparent from this critical study that further research must be conducted in relation to second language learners and the application of synthetic phonics programmes. In addition, with regards to research studies, it is important that the distinction between the effects on first language learners and

second language learners is made explicit. Moreover, in terms of assessment, it is evident that there is a need for the implementation of a variety of assessment procedures, rather than a focus solely on standardized testing. Thus, it is evident that research needs to take into consideration that literacy is essentially socially constructed, and employ strategies which test learners' ability to read in a more culturally sensitive manner.

6.3 Conclusion

In conclusion, it is clear that the concept of literacy and the process of reading are extremely complex and multi-faceted. This critical study has attempted to understand the dominant notions of literacy that are evident in the literature, as well as apply this understanding to how reading is understood and, therefore, taught in the classroom environment. This critical study also exemplified how educational policy can use research findings for particular purposes in particular countries. For example, in the United Kingdom, the use of a Synthetic Phonics-based approach has been highly advocated by educational policy-makers based on the Clackmannanshire study (Johnston & Watson, 2005). However, a sample of research studies relating to second language young learners indicated that although word recognition and word identification was enhanced in all of the included studies, the effects on comprehension were not statistically significant. What this suggests is, as teachers, we need to take into account that further research is still required in terms of synthetic phonics and second language learners, and that we need to take a critical stance towards which instructional method is applied in our classrooms. Most importantly, we, as educators, need to take into account what is best for our learners in our particular contexts.

Appendix A: Included Studies

Electronic Database & Search Word Used	Initial 'hits'	# Studies Included	Study
PsychINFO *Phonics*	173 hits	4	Denton, et al. (2004); Johnston & Watson (2004); Stuart (1999); Stuart (2004);
PsychINFO *Synthetic Phonics*	305 hits	4	Denton, et al. (2004); Johnston & Watson (2004); Stuart (1999); Stuart (2004);
PsychINFO *Synthetic Phonics Instruction*	257 hits	3	Denton, et al. (2004); Johnston & Watson (2004); Stuart (1999);
PsychINFO *ESL and Phonics*	305 hits	4	Denton, et al. (2004); Johnston & Watson (2004); Stuart (1999); Stuart (2004);
PsychINFO *Second language and Phonics*	364 hits	4	Denton, et al. (2004); Johnston & Watson (2004); Stuart (1999); Stuart (2004);
PsychINFO *EAL and Phonics*	213 hits	4	Denton, et al. (2004); Johnston & Watson (2004); Stuart (1999); Stuart (2004);
PsychINFO *ESOL and Phonics*	197 hits	4	Denton, et al. (2004); Johnston & Watson (2004); Stuart (1999); Stuart (2004);
PsychINFO *Analytic Phonics*	305 hits	4	Denton, et al. (2004); Johnston & Watson (2004); Stuart (1999); Stuart (2004);
PsychINFO *Whole Language and Phonics Instruction*	223 hits	2	Stuart (1999); Stuart (2004);
PsychINFO *Preventing Reading Failure*	298 hits	2	Foorman, et al. (1998); Torgesen, et al. (1999);
ERIC *Phonics*	245 hits	3	Denton, et al. (2004); Johnston & Watson (2004); Stuart (2004);
ERIC *Synthetic Phonics*	6 hits	1	Johnston & Watson (2004)
ERIC *Synthetic Phonics Instruction*	0 hits	0	
ERIC *ESL and Phonics*	1 hit	0	
ERIC *Second language and Phonics*	12 hits	2	Denton, et al. (2004); Stuart (2004);
ERIC *EAL and Phonics*	0 hits	0	
ERIC *ESOL and Phonics*	0 hits	0	
ERIC *Analytic Phonics*	2 hits	1	Johnston & Watson (2004)
ERIC *Whole Language and Phonics Instruction*	6 hits	0	
ERIC *Preventing Reading Failure*	6 hits	1	Foorman, et al. (1998)
Total Number of Studies Included (based on Inclusion Criteria):		**6**	**Denton, et al. (2004); Foorman, et al. (1998); Johnston & Watson (2004); Stuart (1999); Stuart (2004); Torgeson, et al. (1999)**

Key Words: *Phonics, Synthetic Phonics, Synthetic Phonics Instruction, ESL and Phonics, Second language and phonics, EAL and phonics, ESOL and phonics, Analytic Phonics, Whole Language and Phonics Instruction, Preventing Reading Failure*

Appendix B: Extracted Raw Data from Included Studies

Johnston and Watson (2004)

Table 1. Mean chronological age, mean IQ (BPVS), mean reading age (British Ability Scales Word Reading Test), spelling age (Schonell Spelling Test), mean emergent reading (Clay Ready to Read Test), letter sound knowledge, phoneme segmentation (Yopp-Singer Test), rhyme skills, and nonword reading (standard deviations in brackets), Experiment 1.

Research group	Age (years)	BPVS (standardised score)	Reading age (years)	Spelling age (years)	Emergent reading (%)	Letter knowledge (%)	Phonemic segmentation (%)	Rhyme skills (%)	Nonwords (%)
Pretest									
Analytic phonics controls, n = 109	5.0 (0.3)	92.5 (15.1)	4.9 (0.1)	5.0 (0.1)	0.9 (4.8)	9.0 (15.4)	4.5 (18.3)	17.9 (30.6)	0.3 (1.8)
Analytic phonics+phonological awareness, n = 78	5.0 (0.3)	90.2 (14.0)	4.9 (0.4)	5.0 (0.1)	2.1 (12.5)	3.9 (8.8)	2.7 (9.9)	21.9 (33.1)	0.6 (4.6)
Synthetic phonics, n = 117	5.0 (0.5)	95.2 (16.8)	4.9 (0.1)	5.0 (0.0)	0.7 (6.2)	6.7 (14.3)	4.1 (14.5)	20.0 (29.1)	0.0 (0.0)
First post-test									
Analytic phonics controls, n = 104	5.4 (0.3)	–	5.4 (0.6)	5.2 (0.4)	37.8 (24.0)	58.1 (24.7)	17.2 (27.4)	26.4 (36.6)	8.8 (22.4)
Analytic phonics+phonological awareness, n = 75	5.4 (0.3)	–	5.4 (0.7)	5.3 (0.5)	23.9 (25.6)	59.9 (24.8)	34.7 (44.6)	36.4 (36.4)	15.8 (29.3)
Synthetic phonics, n = 113	5.5 (0.3)	–	6.0 (0.8)	6.0 (0.7)	53.4 (30.1)	90.1 (14.5)	64.8 (37.9)	46.5 (29.1)	53.3 (41.2)

(Johnston and Watson, 2004, p.334)

Table 5. Performance of children having no phonemic awareness or rhyme production ability at prestest, on reading (British Ability Scales), spelling and phonemic awareness at first post-test, and reading (British Ability Scales) and spelling at second post-test, Experiment 1.

Research group	Chronological age	Reading age	Spelling age	% Phonemic segmentation
First post-test scores				
Analytic phonics controls, n = 45	5.4 (0.3)	5.3 (0.7)	5.1 (0.2)	8.5 (20.6)
Analytic phonics+phonological awareness, n = 35	5.4 (0.3)	5.2 (0.4)	5.2 (0.4)	22.2 (33.8)
Synthetic phonics, n = 41	5.5 (0.3)	5.7 (0.8)	5.7 (0.7)	45.1 (40.6)
Second post-test scores				
Analytic phonics controls, n = 40	6.6 (0.3)	7.1 (0.8)	7.2 (0.7)	
Analytic phonics+phonological awareness, n = 29	6.6 (0.4)	7.4 (1.0)	7.3 (0.9)	
Synthetic phonics, n = 40	6.6 (0.3)	7.3 (0.9)	7.5 (0.9)	

(Johnston and Watson, 2004, p.341)

Table 6. Mean chronological age, mean IQ (BPVS), mean reading age (British Ability Scales), mean emergent reading (Clay Ready to Read Test), letter sound knowledge, phoneme segmentation (Yopp-Singer Test), and rhyme skills (standard deviations in brackets), Experiment 2.

Research group	Age (years)	BPVS (standardised score)	Reading age (years)	Emergent reading (%)	Letter knowledge (%)	Phonemic segmentation (%)	Rhyme skills (%)
Pretest							
No-letter controls, n = 29	5.0 (0.3)	94.3 (12.5)	–	3.7 (16.2)	8.0 (18.6)	2.7 (11.4)	30.5 (37.6)
Accelerated controls, n = 33	5.0 (0.3)	94.6 (15.2)	–	1.8 (10.4)	5.8 (16.9)	1.8 (10.3)	26.5 (38.5)
Synthetic phonics, n = 30	5.0 (0.3)	95.5 (14.4)	–	3.6 (13.4)	8.6 (21.2)	1.7 (9.1)	20.6 (27.2)
First post-test							
No-letter controls, n = 29	5.2 (0.3)	–	5.0 (0.5)	8.0 (18.3)	30.4 (24.0)	9.7 (21.6)	47.1 (38.1)
Accelerated controls, n = 33	5.2 (0.3)	–	5.0 (0.3)	10.3 (16.0)	37.1 (26.8)	9.0 (19.7)	36.4 (37.7)
Synthetic phonics, n = 30	5.3 (0.3)	–	5.4 (0.3)	25.6 (17.7)	51.8 (21.7)	21.2 (26.5)	33.6 (35.9)

(Johnston and Watson, 2004, p.345)

Table 7. Mean chronological age, mean IQ (BPVS), mean reading age (British Ability Scales), spelling age (Schonell Spelling Test), mean emergent reading (Clay Ready to Read Test), letter sound knowledge, phoneme segmentation (Yopp-Singer Test), and rhyme skills, and nonword reading (standard deviations in brackets), second post-test, Experiment 2.

Research group	Age (years)	BPVS (standardised score)	Reading age (years)	Spelling age (years)	Emergent reading (%)	Letter knowledge (%)	Phonemic segmentation (%)	Rhyme skills (%)	Nonwords (%)
No-letter controls, n = 29	5.5 (0.3)	–	5.3 (0.7)		22.5 (24.4)	49.6 (24.7)	28.5 (37.7)	66.6 (37.2)	–
Accelerated controls, n = 33	5.5 (0.3)	–	5.3 (0.6)		25.3 (27.7)	50.5 (26.7)	11.3 (26.5)	35.1 (38.9)	–
Synthetic phonics, n = 28	5.5 (0.2)	–	5.7 (0.7)		44.1 (25.3)	62.2 (25.3)	43.5 (40.7)	33.9 (40.8)	–
Third post-test									
No-letter controls, n = 29	6.0 (0.3)	–	5.6 (0.9)	5.6 (0.8)	24.8 (24.4)	68.1 (22.6)	26.8 (36.2)	41.4 (44.1)	14.6 (26.8)
Accelerated controls, n = 33	6.0 (0.3)	–	5.5 (0.8)	5.4 (0.7)	27.3 (30.6)	68.1 (24.9)	25.8 (36.7)	32.5 (38.3)	12.1 (24.6)
Synthetic phonics n = 30	6.0 (0.3)	–	6.3 (1.3)	6.3 (0.8)	49.9 (28.8)	82.0 (20.1)	69.3 (36.1)	61.6 (44.9)	54.6 (40.7)

(Johnston and Watson, 2004, p.349)

Torgesen, et al. (1999)

Table 2
Reading Outcomes for All Children at the End of Kindergarten, First Grade, and Second Grade

	Group							
	NTC		RCS		PASP		EP	
Measure and grade	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
WRMT Word Attack								
K	0.13	0.50	0.14	0.53	0.76	1.7	0.28	1.3
1	2.8	4.0	4.9	6.6	9.8	8.1	4.8	5.2
2	10.4	8.7	12.2	10.6	21.3	11.1	12.0	8.8
Nonword list[a]								
K	0.48	1.3	0.57	1.4	1.8	3.1	0.61	1.9
1	5.9	9.2	8.3	11.2	19.2	14.4	7.5	7.3
2	23.2	22.4	23.1	22.9	43.2	20.0	26.3	20.8
WRMT Word Identification								
K	1.1	2.5	1.6	2.0	1.2	1.6	2.7	3.1
1	16.6	14.4	21.4	14.7	25.6	15.8	20.3	13.4
2	37.2	17.2	39.6	16.0	47.9	16.8	40.9	14.4
Real word list[b]								
K	4.5	5.4	5.6	4.5	5.1	5.3	7.5	7.0
1	40.8	36.8	50.5	35.8	65.8	34.9	48.6	33.2
2	103.9	51.5	109.7	51.1	137.9	43.0	116.5	43.1
WRMT Passage Comprehension								
1	6.8	7.1	9.4	6.8	10.7	7.7	8.4	7.1
2	19.3	9.1	18.9	9.6	23.2	9.6	19.5	9.0
GORT-III Comprehension								
1	2.2	3.5	3.1	3.3	3.8	3.4	3.7	4.8
2	8.8	6.6	8.1	5.4	10.9	7.2	11.0	7.6
WRAT Spelling (Grade 2)	30.5	5.5	30.9	5.9	33.5	5.7	31.5	4.4
Developmental spelling (Grade 2)	22.5	4.2	22.5	5.2	25.5	3.7	22.5	5.6
WJPB Calculation (Grade 2)	7.8	2.9	7.3	2.9	8.2	2.6	7.7	2.8

Note. Preliminary reports on the first and second grade outcomes for some of these measures were presented in earlier discussions of this study that appeared as part of special issues in *Scientific Studies of Reading* (Torgesen, Wagner, & Rashotte, 1997) and *Learning Disabilities: An Interdisciplinary Journal* (Torgesen, Wagner, Rashotte, Alexander, & Conway, 1997). NTC = no-treatment control; RCS = regular classroom support; PASP = phonological awareness plus synthetic phonics; EP = embedded phonics; WRMT = Woodcock Reading Mastery Test—Revised; GORT-III = Gray Oral Reading Test–III; WRAT = Wide Range Achievement Test—Revised; WJPB = Woodcock–Johnson Psycho-Educational Battery.
[a]The nonword list is a list of 63 nonwords that increased in difficulty more gradually than the Word Attack subtest.
[b]The real world list is a list of 104 words that increased in difficulty more gradually than the Word Identification subtest.

(Torgesen, et al., 1999, p.585)

Table 4
Growth in Phonemic Awareness and Reading From Pretest to End of Treatment for Children in the PASP and EP Groups Matched for Percentage of Sample Removed Because of Grade Retention

	Measurement point											
	1		2		3		4		5		6	
Outcome measure	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Phonological awareness												
Elision												
PASP	1	2	6	2	10	4	12	4	14	4	17	5
EP	1	2	5	3	8	4	10	4	13	5	13	4
Blending												
PASP	3	2	7	4	13	4	16	3	18	4	19	5
EP	3	4	5	4	10	5	14	4	17	3	18	3
Phonetic decoding												
WRMT Word Attack												
PASP	0	0	1	2	7	5	12	8	18	9	24	10
EP	0	0	0	2	2	4	6	5	10	8	14	9
Nonword list												
PASP	0	0	2	3	12	9	23	14	34	16	50	17
EP	0	0	1	2	3	4	10	7	17	12	31	21
Real word reading												
WRMT Word Identification												
PASP	0	0	2	2	14	8	31	15	46	13	55	13
EP	0	0	3	3	12	9	25	12	37	12	46	11
Real word list												
PASP	1	1	6	6	33	20	78	32	120	39	154	30
EP	1	1	9	8	23	22	60	30	95	35	131	35
Fluency measures[a]												
TOWRE Phonemic Decoding Efficiency												
PASP							12	8	18	12	25	13
EP							6	5	10	7	14	10
TOWRE Sight Word Efficiency												
PASP							22	13	33	15	43	15
EP							17	10	27	12	36	14
Reading comprehension												
WRMT												
PASP							13	8			26	8
EP							11	6			22	8
GORT-III												
PASP							5	3			13	7
EP							5	5			13	8

Note. Numbers denote raw scores. PASP = phonological awareness plus synthetic phonics; EP = embedded phonics; WRMT = Woodcock Reading Mastery Test—Revised; TOWRE = Test of Word Reading Efficiency; GORT-III = Gray Oral Reading Test–III.
[a]These measures of fluency of phonetic decoding and sight word reading require children to pronounce as many nonwords or real words as possible in 45 s from lists that gradually increase in difficulty. The score is the average between two forms, and reliability is above .90 for both tests.

(Torgesen, et al., 1999, p.587)

Stuart (1999)

Table 5. Experimental measures 2: Mean differences in reading and spelling over time

Measure	*N* items		(pretest) T1		Gains T1–T2		Gains T2–T3		(del. post-test) T3	
			JP	BB	JP	BB	JP	BB	JP	BB
BAS reading (raw)		mean	1.51	0.25	7.15	2.81	27.5	20.5	35.85	22.78
		SD	(4.7)	(0.9)	(9.3)	(4.1)	(16.7)	(16.0)	(21.4)	(18.6)
			$z = 1.39$		$z = 1.92$		$F = 4.86$		$F = 11.79$	
			n.s.		n.s. ($p < .06$)		$p < .03$		$p < .0008$	
Young reading (raw)		mean	4.71	3.44	5.39	3.84	9.1	7.9	19.24	14.80
		SD	(4.9)	(4.4)	(4.1)	(4.5)	(4.9)	(4.8)	(7.2)	(7.1)
			$z = 1.35$		$F = 3.57$		$F = 1.80$		$F = 10.62$	
			n.s.		n.s. ($p < .07$)		n.s.		$p < .002$	
Read words	14	mean	1.26	0.61	4.43	2.69	6.3	7.2	11.85	10.30
		SD	(2.9)	(1.2)	(4.0)	(3.2)	(4.4)	(4.0)	(3.6)	(4.4)
			$z = 0.87$		$F = 6.28$		$F = 1.42$		$F = 4.18$	
			n.s.		$p < .02$		n.s.		$p < .05$	
Read CVC nonwords	10	mean	0.69	0.07	2.55	0.52	3.5	3.6	6.70	4.07
		SD	(2.2)	(0.4)	(2.9)	(1.6)	(2.9)	(3.6)	(3.2)	(3.9)
			$z = 1.85$		$z = 4.22$		$F = 0.06$		$F = 14.56$	
			n.s.		$p < .00001$		n.s.		$p < .0002$	
Write words	10	mean	0.30	0.09	3.00	0.59	3.8	4.4	7.07	4.89
		SD	(0.9)	(0.3)	(2.8)	(1.5)	(2.6)	(2.6)	(2.5)	(3.0)
			$z = 0.81$		$z = 5.12$		$F = 1.24$		$F = 17.04$	
			n.s.		$p < .00001$		n.s.		$p = .0001$	

(Stuart, 1999, p.601)

Table 6. Mean differences on additional measures given at delayed post-test

Measure	*N* items		Jolly Phonics	Big Books	Test statistic	Significance level
Neale Accuracy raw score		mean (SD)	18.72 (14.78)	11.95 (12.60)	$F = 6.71$	$p = .01$
Neale Comprehension raw score		mean (SD)	5.02 (4.24)	3.54 (3.66)	$F = 3.77$	n.s. ($p < .06$)
Clay Dictation	37	mean (SD)	32.91 (4.14)	26.38 (10.84)	$F = 17.07$	$p < .0001$
Schonell spelling raw score		mean (SD)	17.69 (10.56)	9.54 (8.49)	$F = 20.15$	$p < .00001$
Schonell Spelling Age		mean (SD)	6.76 (1.07)	5.84 (1.00)	$F = 21.93$	$p < .00001$
BAS reading age		mean (SD)	7.09 (1.20)	6.28 (1.07)	$F = 13.76$	$p = .0003$

(Stuart, 1999, p.602)

Stuart (2004)

Table 1. Scores on experimental measures in July 1998, comparing children who remained in the BB group with children who moved to the LP group

	Means and *SD*, children remaining in BB group	Means and *SD*, children moving to LP group	Test statistic and probability values
Initial sound segmentation	19.2 (6.9)	10.4 (6.4)	$t = 0.63$ *ns*
Letter sound recognition	22.11 (5.78)	22.37 (4.22)	$t = 0.17$ *ns*
Clay dictation	26.89 (10.94)	25.36 (10.87)	$t = 0.49$ *ns*
BAS reading age	6.40 (1.12)	6.05 (0.95)	$t = 1.16$ *ns*
Schonell spelling age	5.93 (1.00)	5.66 (0.98)	$t = 0.98$ *ns*
Letter sound recall	22.7 (7.54)	22.5 (9.74)	$t = 0.07$ *ns*
Read nonwords	3.92 (4.09)	4.37 (3.76)	$t = 0.4$ *ns*
Neale comprehension	2.32 (3.22)	1.58 (2.94)	$t = 0.81$ *ns*
Phoneme segmentation	4.08 (3.66)	5.78 (3.46)	$t = 0.16$ *ns*

(Stuart, 2004, p.19)

Table 3. Descriptive statistics for chronological age and measures of phoneme segmentation, grapheme-phoneme correspondence knowledge, single word reading and spelling, by group

Measure	Group	Mean	*SD*	Range
Chronological age	JP	7.45	0.25	6.75–7.75
	BB	7.38	0.31	6.83–7.83
	LP	7.38	0.25	7.00–7.75
Yopp-Singer phoneme segmentation	JP	17.96	4.28	0–22
	BB	9.76	7.14	0–22
	LP	15.29	3.08	8–22
Letter-sound recall	JP	35.60	5.73	22–43
	BB	26.94	7.63	10–42
	LP	39.10	3.06	31–43
Aliens nonword reading	JP	22.56	8.79	3–35
	BB	14.33	9.08	0–29
	LP	19.85	8.11	3–33
BAS reading age	JP	8.17	1.25	5.83–11.83
	BB	7.54	1.47	4.67–10.50
	LP	8.00	1.46	5.92–12.33
Schonell spelling age	JP	7.86	1.15	6.00–10.00
	BB	6.89	1.31	4.50–9.33
	LP	7.51	0.96	5.75–9.50

(Stuart, 2004, p.23)

Table 4. Descriptive statistics for Regular, Exception and Nonword reading, Regularity Effects and Proportion of Regularization Errors, by group

Measure	Group	Mean	*SD*	Range
Funnell & Pitchford regular words	JP	28.27	11.27	1–40
	BB	19.42	13.6	0–38
	LP	26.25	12.1	1–40
Funnell & Pitchford exception words	JP	11.54	5.68	0–21
	BB	8.69	6.14	0–19
	LP	8.65	5.27	0–18
Funnell & Pitchford nonwords	JP	26.23	11.64	0–39
	BB	17.21	13.67	0–39
	LP	24.30	12.76	1–40
Size of regularity effect	JP	16.73	7.43	−3–28
	BB	10.73	8.43	−1–25
	LP	17.60	7.59	1–25
Proportion of regularization errors	JP	42.28	21.81	0–84%
	BB	28.01	24.09	0–77%
	LP	38.29	22.89	0–76%

(Stuart, 2004, p.24)

Table 5. Descriptive statistics for chronological age, and Neale reading accuracy and comprehension measures

Measure	Group	Mean	*SD*	Range
Chronological age	JP	7.45	0.25	6.75–7.75
	BB	7.38	0.31	6.83–7.83
	LP	7.38	0.25	7.00–7.75
Neale reading accuracy age	JP	7.60	1.16	6.08–10.67
	BB	7.36	0.95	6.25–9.92
	LP	7.98	1.47	6.50–11.92
Neale reading comprehension age	JP	7.19	1.02	6.08–10.75
	BB	7.26	0.98	6.08–9.83
	LP	7.42	1.01	6.42–10.33

(Stuart, 2004, p.25)

Denton, et al. (2004)

TABLE 1. Preintervention Performance on Language Assessment Scales (LAS) for Treatment and Comparison Groups

		LAS-O					
		English		Spanish		LAS Reading/ Writing Spanish[a]	
Group	*n*	*M*	SD	*M*	SD	*M*	SD
Read Well:							
Treatment	16	2.69	1.25	3.56	1.03	2.00	.89
Comparison	14	3.07	1.07	3.00	1.18	1.85	.80
Read Naturally:							
Treatment	29	3.76	1.15	3.86	.99	2.28	.65
Comparison	25	3.52	1.05	3.64	1.25	2.28	.79

NOTE.—LAS-O ratings range from 1 to 5, with 5 indicating high oral proficiency. LAS R/W ratings range from 1 to 3, with 3 indicating high reading and writing proficiency.

[a]Scores are for reading only.

(Denton, et al., 2004, p.295)

TABLE 3. Performance on the Woodcock Reading Mastery Tests—Revised Subtests, for Read Well Treatment (n = 19) and Comparison (n = 14) Groups

	Pretest		Posttest		
Subtest/Group	*M*	SD	*M*	SD	Mean Gain[a]
Word identification:					
Treatment	84.68	9.74	88.74	10.79	4.06
Comparison	87.93	8.20	88.14	7.06	.21
Word attack:					
Treatment	86.79	7.55	91.95	8.69	5.16
Comparison	88.86	6.59	91.21	6.15	2.35
Passage comprehension:					
Treatment	81.26	12.27	82.84	11.69	1.58
Comparison	83.07	7.37	84.64	9.70	1.57

[a]Mean gain is in standard score units.

(Denton, et al., 2004, p.300)

TABLE 4. Performance on the Woodcock Reading Mastery Tests—Revised Subtests, for Read Naturally Treatment (n = 32) and Comparison (n = 28) Groups

	Pretest		Posttest		
Subtest/Group	*M*	SD	*M*	SD	Mean Gain[a]
Word identification:					
Treatment	93.72	8.74	94.84	11.64	1.12
Comparison	94.79	8.75	96.54	9.65	1.75
Word attack:					
Treatment	96.53	8.45	96.31	9.37	−.22
Comparison	97.57	8.88	98.54	8.99	.97
Passage comprehension:					
Treatment	87.62	7.77	89.75	7.90	2.13
Comparison	89.36	9.31	90.07	10.26	.71

[a]Mean gain is in standard score units.

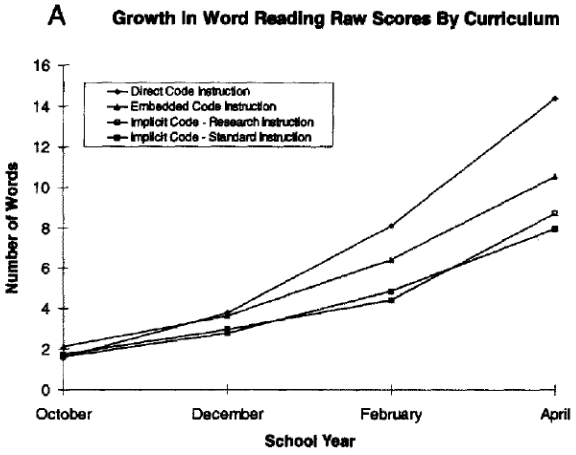
(Denton, et al., 2004, p.300)

Foorman, et al. (1998)

Table 4
Raw Score Means, Standard Deviation, and Sample Sizes for Word Reading at Each Wave of Data Collection

Instructional group	October			December			February			April		
	M	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*
Direct code												
Grade 1	0.20	0.51	44	2.17	2.95	42	6.44	7.13	39	12.68	10.21	41
Grade 2	5.73	6.66	15	8.57	7.69	14	12.71	9.60	14	19.43	10.03	14
Embedded code												
Grade 1	0.18	0.88	49	0.72	1.61	46	1.90	2.77	41	5.00	8.15	39
Grade 2	4.75	4.92	36	7.46	6.77	35	12.86	11.04	29	18.29	12.02	28
Implicit code-research												
Grade 1	0.07	0.32	57	0.57	1.20	58	1.20	2.30	55	5.23	7.20	53
Grade 2	5.12	5.24	28	7.96	6.97	28	10.93	9.83	38	16.16	14.32	25
Implicit code-standard												
Grade 1	0.13	0.61	24	0.21	1.02	24	0.57	1.59	23	1.91	2.81	23
Grade 2	3.17	4.90	24	5.36	7.31	24	9.13	7.87	23	14.27	9.35	22

(Foorman, et al., 1998, p.44)



(Foorman, et al., 1998, p.46)

Table 5
Standard Score Means, Standard Deviation, and Sample Sizes on May Achievement Tests of Reading and Spelling for Four Instructional Groups

Instructional group	WJ-R Reading		KTEA spelling	FRI comprehension
	Basic	Passage comprehension		
Direct code				
M	96.1	96.7	85.7	81.8
SD	14.6	15.9	12.2	9.4
n	58	58	58	50
Embedded code				
M	88.6	91.4	82.0	80.8
SD	11.2	12.7	8.2	8.3
n	82	82	82	62
Implicit code-research				
M	89.6	92.0	81.6	81.5
SD	12.7	14.8	9.1	8.7
n	78	78	77	61
Implicit code-standard				
M	84.5	89.0	81.7	83.1
SD	9.7	12.1	7.6	6.9
n	45	45	45	34

Note. WJ-R = Woodcock-Johnson Psychoeducational Battery-Revised (Woodcock & Johnson, 1989); KTEA = Kaufman Test of Educational Achievement (Kaufman & Kaufman, 1985); FRI = Formal Reading Inventory (Wiederholt, 1986). The FRI was not administered to children who scored less than 5 points on the WJ-R Passage Comprehension.

(Foorman, et al., 1998, p.50)

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