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Beginning Readers Have No Prior Experience with Sound Segmentation

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Abstract
This article reviews the research literature regarding the overpowering impact of the interactive whiteboard on improving EFL beginning readers' phonemic segmentation skill. EFL beginning readers must be exposed to phonemic awareness from the very beginning of their education in order to gain the required foundation needed to become better readers. Teachers of beginning readers should use different methods in order to help students become phonemically aware. In order to support EFL beginning readers in becoming phonemically aware, one of the recent educational trends is to use technology inside classroom. It is obvious that literature support the technology of integrating the interactive whiteboard as an instructional tool and its leading role in enhancing the educational process. It can also motivate and boost student engagement. Although there has been a growing body of research that shows a general positive relationship between instructional technology and reading achievement since the last two decades, there is little research about integrating interactive whiteboard as an instructional tool into the EFL classrooms to help students develop their phonemic segmentation skill.
Keywords: Phonemic awareness, Phoneme segmentation, Interactive whiteboard (IWB), EFL beginning readers.

1. Introduction

In general, children have the tendency to learn to speak before learning to read or write. The task of acquiring spoken language competence starts early in the course of development of the normally growing children and is easily achieved with very little direct instruction (Sensenbaugh, 1996; Garton & Pratt, 1998; Snow, Burns & Griffin, 1998). Before going to school to commence their formal education, children possess the basic speaking and listening skills essential for effective communication. This will help them have a reciprocal understanding of the speech they utter to one another during the early period of language development. The processes concerned with speech production and comprehension of these young children have become largely automatic and unconscious (Liberman, Shankweiler, Liberman, Fowler, & Fischer, 1977).

Despite the fact that children are able to effectively communicate with each other using spoken language, they are initially unaware that they are showing early phonemic awareness. Initial encounter with language is usually unintentional and often takes place through incidental learning experiences (Snow et al., 1998). For example, if children are able to recognize and produce rhyming patterns such as fat, sat, hat and cat, they are actually demonstrating one of the phonemic awareness skills; they are deleting the first phoneme, i.e. the onset, in the syllable and replacing it with another. Doing this kind of skill opens the door widely to the awareness that spoken words are made up of a sequence of individual sounds. This understanding that spoken language is made up of single sounds is known as phonemic awareness (Yopp & Yopp, 2000).

For the purpose of this study, the focus will be on phonemic awareness rather than phonological awareness. It is, therefore, important to make a clear distinction between phonological and phonemic awareness. The term phonological awareness came into use in the late 1970s and was used interchangeably with phoneme awareness (Lewkowicz, 1980).

According to Yopp and Yopp (2000), phonemic awareness, which is a sub category of phonological awareness, refers to the awareness of the sound structure of language in general. Phonological awareness refers to the sensitivity to the sound structure of the English language. More specifically, phonological awareness is a term utilized for an awareness of ''any size unit of sound'' (Yopp & Yopp, 2000, p. 130). Uhry (1999) described phonological awareness as an awareness that deals with larger parts of oral language such as sentences and/or whole words, but phonemic awareness pays a careful attention to the single sounds in words; regardless to meaning in both processes. Phonemic awareness, then, belongs and falls under the categories of the wider umbrella of phonological awareness. However, Walsh (2009) states that phonemic awareness definition has not been clear over years. Because of the varied definitions, therefore, the difference between phonological awareness and phonemic awareness has been blurred and confused. In some cases, they have been considered the same thing (Walsh, 2009). Other Studies (Atwill, Blanchard, Gorin, & Burstein, 2007; Manyak, 2008) use both terms to describe the use of segmentation, blending and deletion of phonemes. In a word, phonemic awareness is the abstract ability to hear and make relations between letter sound correspondences, and to understand the formation of how words are created from discrete sounds and then turn into united sounds when performing reading.

Other scholars define phonemic awareness as the understanding that words can be divided into smaller units of sounds that are known as phonemes. In the English language, there are 44 phonemes (Ehri, Nunes, Willows, Schuster, Yaghoub-Zadeh & Shanahan, 2001). When segmenting the spoken word into its smaller components of sounds, young learners are exposed and introduced to the linguistic unit that is called phoneme (Hoover, 2002). A phoneme is then "the smallest unit of speech that distinguishes one word from another. For example, the word barn has four distinct speech sounds, or four phonemes (b, a, r, and n), while the word sight has five letters, but only three phonemes (s, i, and t)" (Rinsky, 1997, p.208).

Once a child has developed phonemic awareness at early age, he or she can begin to practice phonemic awareness skills, such as blending and segmenting words into single sounds which are called phonemes that should burgeon and move to more complex phonemic awareness skills (Walsh, 2009).

This paper reviews the current literature with respect to theoretical framework relevant to this study and the significant role of phonemic awareness in learning to read. Integrating the technology of Interactive whiteboard in classroom will be presented as well. The researcher focuses on the significance of English phonemic awareness and specifically phonemic segmentation skill in order to help EFL beginning readers learn to read through using the interactive whiteboard. This paper is divided into five sections: theoretical framework, Phonemic awareness and learning to read, phonemic segmentation, EFL beginning readers and finally interactive whiteboard and students' learning.

1.1 Theoretical Framework

Using interactive whiteboard technology in classrooms is considered one of the most current education trends. An interactive whiteboard can be defined as a large, touch-sensitive board that controls a computer connected to a digital projector (Smith, Higgins, Wall, & Miller, 2005). This kind of technology has many benefits. One of the advantages of using this technology is that the student can receive the instructional message in two ways. The instructional message can be received as words and as pictures. What encourages deeper understanding of the material being presented is to combine both words and pictures with beginning readers (Mayer, 2003). The Theory of Multimedia Learning is a theory that originates from the idea that learning is meaningful when learners choose relevant information, organize the information, and combine the information with other knowledge. Mayer uses the ideas of dual coding theory to clarify that learners deal with two different information systems, a visual system and a verbal system (Mayer, 1997).

"*Are We Asking the Right Questions"* is a study conducted by Richard Mayer concerning the theory of multimedia learning. He defines multimedia learning as "presenting explanations visually as well as verbally" (Mayer, 1997, p. 1). He also pointed out that learners interest in multimedia learning when they are provided with information in more than one way, for example pictures and words. In his study, Mayer examined multimedia as "presenting computer-generated animations synchronized with computer-generated narration" as well as "presenting illustrations next to corresponding text" (p. 1). At the end of his study, he concludes that there is still research left to be done on how technology influences students' learning. He states that "the potential for computer-based aids to learning remains high, although the current contribution of technology to pedagogic innovation is frustratingly low", recommending that "research is needed in how people learn with multimedia" (p.17). However, he does emphasize some important theoretical concepts about the Generative Multimedia Lean1ing Theory and explains that captioned illustrations and narrated animations help learners select appropriate visual and verbal information that assist in the organizing process when generating cause-and-effect relationships among the processed information. Since educational technology usually includes some kind of visual and verbal combination, students' learning will be influenced due to the fact that the multimedia technology can help organize cognitive processes, though the study does not prove this positive effect.

McTigue (2009) conducted another multimedia-related study taking the principles of Mayer's multimedia learning theory and applied the ideas to students in the middle grades when reading science texts. Unlike Mayer's study, McTigue' study does not directly discuss technology as a form of multimedia. However, the findings of the study can be expressed with technology in mind.

The major aim of the research was to notice if middle grade students' comprehension of science text was influenced due to using diagrams within the text. Students were presented with text either about life-science or physical science. These texts were then manipulated; some of the texts had no illustrations. On the other hand, others had illustrations with parts labeled. Still others had illustrations with main process descriptions, and some contained illustrations with labels and descriptions. Then, students either read standard text or text that gestured them to access the diagrams. The findings of the study show that the diagrams in science texts did not benefit students' comprehension. In order to truly help young readers who struggle to comprehend text, McTigue recommends that it is crucial to continue to research the multimedia learning theory using younger populations and within the classroom setting. As expressed by Mayer's study, ongoing research in multimedia learning should explore the potential effect of technology.

A study conducted by Yilmaz-Soylu and Akkoyunlu (2009) investigated the impact of learning styles on achievement in different learning environments. In this study, the researchers used both Kolb's Learning Style

Model and Mayer's Generative Theory of Multimedia Learning as a framework for their research. The researchers focused around three main questions: 1.) What is the impact of learning styles on success in text-based learning environments? 2.) What is the impact of learning styles on success in a narration-based learning environment? 3.) What is the impact of learning styles on success in computer-mediated (music, text, narration, static picture) learning environments? The findings of the study found that the different learning styles of the students do not impact the achievement of students in different learning environments. However, the authors of the study do state that what is important is the time and place of the media use regardless to the type of media being used in the learning environment.

Throughout these three studies, the prevailing theme is that multimedia or technology does not influence students' learning; this conclusion based on the fact that technology is ongoing trend in education and widely used in classrooms nowadays is surprising. Potent uses of technology and screen media are active, engaging, hands-on, and should be used as one of many tools to support learning (The National Association for the Education of Young Children (NAEYC), 2011). Because technology is the most popular form of multimedia today, it is important that more research take place in this domain, especially Taking into consideration McTigue's point that elementary school-aged children have not been researched as a population, it is crucial that more research should occur regarding this area. However, other important features of learning such as motivation, attention, and engagement have not been included by these studies. Some basic reading skills have not been included, either.

1.2 Phonemic Awareness and Learning to Read

A teacher, who has struggling readers, often tries to look for appropriate techniques that help learners improve their reading skills. Before doing this, a reason behind such an obscurity that leads to students' suffering in reading should be clarified. There is an element missing while the child has been practicing the reading skill. Phonemic awareness probably appears to be the "missing element which will help a child move as naturally into the reading phase of the overall language acquisition picture as he did into the speaking phase" (Sumpter & Szitar, 1993, p.210).

A large number of students in the beginning years of primary school encounter difficulties with reading in which their ability to be further successful at school as well as thriving in life skills might be influenced. A number of scholars suggest that the first stages of learning to read should be in the very beginning, where many students experience difficulties and encounter problems with reading (Manyak, 2008; Lane, Pullen, Eisele & Jordan, 2002). Further, reading is "the process of constructing meaning from written text" (Winch, Johnson, March, Ljungdahl, & Holliday, 2004, p. 3) and it is a completely essential skill that affects all fields of life, including primary and high schools, university and the entire working life. Researchers (Lane, Pullen, Eisele, & Jordan, 2002) showed that reading is necessary for life and it is a "foundation skill for school learning and life learning" (p. 101).

Reading in English language is a complicated system of skills and knowledge. All parts of this system work together and enhance each other (Adams, 1990).To decode the written words in this intricate system, children learn that the spoken words they hear are composed of sounds represented by letters of the alphabet (Ehri, 2005; Glenberg, Goldberg & Zhu, 2011). In order to learn how to read, Mason (1984) clarifies that a child must have the ability to analyze words to elucidate the sounds involved in words and then eventually connect them to letters. Mason also explains that two letters may describe one sound, some letters have more than one sound, and letter names do not vitally represent that letter's primary sound. Furthermore, Mason agrees to the assumption that there is a connection between phonemic awareness that is the awareness of speech sounds and beginning reading. Phonemic awareness plays a crucial role in children's reading acquisition, and it is considered essential for later autonomous reading (Goswami, 2001; Yopp, 1988). There is "compelling evidence" (p.779) in which phonemic awareness is needed to develop to letter-sound relationships when moving through the stages of reading acquisition (Juel, 1991). It should be noted that a developed awareness of the sounds in words has been corresponded to awareness of how the alphabet symbols are used to spell and read words. Children having phonemic awareness can rhyme, form words by blending sounds, count the sounds in a word, segment words into sounds, and manipulate such as substitute, add, and delete sounds in words (Yopp, 1988).

Like many other researchers, Yopp (1995) finds out that most young learners who enter kindergarten lack phonemic awareness. She suggests that since there are so many students lacking phonemic awareness skills, the need for quick and effective intervention is encouraged in order that students can make progress in the regular education curriculum without providing a referral to special education services. A study was conducted by Ball and Blachman (1991) shows that there will be ongoing difficulties in reading and spelling instruction to children who do not receive these skills before formal reading instruction as they move through their educational experiences.

Literature supports the claim that phonemic awareness instruction plays an effective role in both teaching phonemic awareness skills and helping children acquire the skills of reading and spelling. Regarding the suggestion presented by the National Reading Panel's (NICHHD, 2000) that phonemic awareness becomes an

integrated component of daily reading instruction, a meta-analysis study was conducted by Ehri et al.(2001). They pointed out that many experiments showed the same findings concerning the benefits of phonemic awareness instruction. Thus, these experiments provided solid evidence and support for the claim that phonemic awareness instruction is more proactive in teaching phonemic awareness skills and helping children acquire the skills of reading and spelling than any other alternative forms of instruction. Hence, phonemic awareness is undoubtedly related to the success of reading and that children benefit from phonemic awareness instruction.

A study conducted by Cunningham (1990) investigated whether explicit verses implicit instruction in phonemic awareness had influence in children's achievement in reading. She found that explicit instruction which connected phonemic awareness to the reading process was more effective than skill and drill. Children showed more motivation to use phonemic awareness and strategies for decoding as well. It has been found that Yopps' (1995) statement lent support to Cunningham's findings; she stated that "phonemic awareness should not be addressed as an isolated skill to be acquired through drill type activities" (p. 27), and that "phonemic awareness activities should be playful and engaging, interactive and social, and should stimulate curiosity and experimentation with language" (Yopp & Yopp, 2000, p.132).

It should be pointed out that phonemic awareness instruction teaches students the sounds in terms of noticing, thinking about, and manipulating them in spoken language (The National Institute for Literacy, 2001). Woods (2003) suggests that children can and should informally develop phonemic awareness skills before school. Phonemic awareness is not only a predictor of future reading success, it also has been found to be entirely essential for students who are learning to read. Hecht and Close (2002) stated that emergent learners show a deep disposition to increase their phonemic awareness when the instruction is teacher-led and specific.

Due to the large number of contentions, it may be hard to understand what role phonemic awareness plays in reading. Walsh (2009) possibly presents the best case regarding whether phonemic awareness is truly a prerequisite or result of learning to read. Walsh suggests that if one thinks that phonemic awareness is a result of reading then reference to phonemic awareness skills is made. The second view involves the idea that one has to understand that phonemic awareness is developed prior to phonemic awareness skill and knowledge of the alphabet; children can only perform a skill that they have prior knowledge of and phonemic awareness skill is then supported by phonics.

As indicated above, building a solid literacy education is regarded a very important action required for developing phonemic awareness in beginning readers. Griffith and Olson (1992) proposed that if students have the ability to acquire a strong understanding of phonemic awareness, they will then become more aware of the basic sounds of speech. In addition, Edelen-Smith (1997) highlighted the importance of early training in phonemic awareness that is considered to be a primacy in the classroom in order to help and improve early reading instruction and reduce reading failures.

As a result, students need instruction which is relevant for their level of phonemic awareness. Phonemic awareness includes various skills. It should be then targeted during instructional times. Three of the skills were consistently addressed in research. One of these skills is phoneme segmentation.

1.3 Phoneme segmentation

The early literacy literature supported the significance of phonemic awareness, in particular segmenting and blending, in preliteracy and early literacy development (Anthony & Lonigan, 2004; Nation & Hulme, 1997; Yeh, 2003). To date, there has been a burgeoning consensus that beginning readers, particularly those who struggle with reading, need attentive instruction in specific skills. For instance, young readers need to know how to manipulate phonemes which are the smallest unit of speech. It has been found that young readers need to develop the ability to hear and manipulate separate sounds before being able to understand the printed letters (Gyovai, Cartledge, Kourea, Yurick & Gibson, 2009). Thompson and Vaughn (2007) strictly argued that phonemic awareness is an auditory activity skill that deals with the progress of a range of identification, manipulation, blending and segmenting skills. At the heart of phonemic awareness, there are phoneme segmentation skill and blending skill. Researchers (Pullen, Lane, Lloyd, Nowak & Ryals, 2005, p. 64) defined these two significant skills as "Phoneme segmenting is breaking the sound stream into individual sounds (phonemes), and phoneme blending is taking those individual sounds and reassembling them to create words." Other simpler skills of sound in phonemic awareness include identification of phonemes. Such skills include identifying the initial sounds of a word, which is supposed to be the easiest skill (Adams 1990), followed by identification of the final sound in a word and then the middle sound of words. However, Segmenting and blending individual sounds within words is the most difficult level of phonemic awareness (Adams, Foorman, Lundberg, & Beeler, 1998) and has a strong correlation to learning to read (Adams, 1990; Stanovich, 1986).

The International Reading Association (1998) stated that phonemic awareness is regarded as a predictor of beginning learners' English reading success. Gyovai et al. (2009) confirm that the single most effective predictor of reading and spelling skills in the beginning years of school is the level of phonemic awareness, particularly phonemic segmentation. Phonemic segmentation includes a student's ability to dissect a word into its phonemes.

Yeh and Connell (2008) strongly argued that there is now powerful evidence from experimental studies that the

positive impacts of teaching segmentation skills elaborate to reading comprehension. Hence, children aged 5 years old and 4 years old that received training in phoneme segmentation in a randomized study expected to improve their future reading performance. Moreover, the skill in phoneme segmentation is a better predictor of early development in learning to read than other skills such as rhyming skill or vocabulary knowledge (Yeh & Connell, 2008). This indicates the significant role phoneme segmentation plays in the foundation of the acquisition of reading.

Manning (2005) pointed out that phoneme segmentation is demonstrated when a teacher gives students a word and ask them to try to orally break the word apart into its smallest parts. Students who have the ability to segment words should also have the ability to write and read the word as they divide it into the smaller phonemes. In addition, a suggestion for teaching phoneme segmentation offered by Woods (2003) included a kinesthetic manner in order to have learners become comfortable with this skill. The procedure is as follows: the student says a familiar word and divides it into its separate phonemes. When a specific finger is designated for each phoneme, the activity then becomes kinesthetic. To help a student link each phoneme with the movement, he/she taps his/her fingers on knee or a table when the phoneme is expressed verbally.

Being a progressive process, Manning (2005) suggests that phoneme segmentation skill should be demonstrated in four different levels. **Table 1** describes the four different levels. The first level involves no segmentation of the word but the student repeats the word being heard instead. In the second level, the students are required to divide the word by syllables. Third level requires a student to separate one of the syllables into segments. The fourth level is accomplished when a student segments all of the phonemes in the word. Thus, in order to help educators improve the development and success of the each single student when practicing segmentation skill, they should be able to identify the precise progressive level in which a student is segmenting words into phonemes.

Table 1: The Four Different Levels of Segmenting the Word "pony"

Progressive Level	Student Reaction	Demonstration
Level 1	/pony/	There is no segmentation of the word
Level 2	/po/-/ny	Words are divided by syllables
Level 3	/p/-/o/-/ny/ or /po/-/n/-/y/	Students separated one syllable into segments
Level 4	/p/-/o/-/n/-/y/	Students segmented all phonemes

In another study, researchers examined the phonemic awareness of children aged 4, 5, and 6 years old. Children were required to tap a wooden block once for each phoneme or syllable in a spoken word. The findings of the study showed that children in each age group showed more ability in successfully segmenting words into syllables than segmenting words into phonemes. Thus, the ability of segmenting words into phonemes appeared at 5 years of age and there was an increase in the number of children who were successful at phonemic segmentation from age 5 to age 6 (Liberman, Shankweiler, Fischer, & Carter, 1974).

In Jordan, beginning readers may not experience a full-fledged sense of English phonemic awareness when they enter school, although most of them have entered kindergarten (Al-Shaboul, Assasfeh, Alshboul, & Almomani, 2013). Fortunately, phonemic awareness skills such as phonemic segmentation can be gained within a period of time (Reading & van Deuren, 2007) and help students reveal the obscurity that leads them to struggle with reading in the very beginning reading stages. In a word, reading ability may burgeon with the help of explicit instruction of phonemic awareness skills.

As mentioned earlier, phonemic awareness instruction is thus considered beneficial and helpful to beginning readers. It has been stated that phonemic awareness is a predictor of beginning English reading success for learners (The International Reading Association, 1998). Being one of phonemic awareness skills, phonemic segmentation has its own reputation in literature. For example, Liberman (1971) suggested that the most important task of the beginning reader is to recognize that the speech flow can be segmented into separate sounds. Comparing with other tasks and skills, phonemic segmentation is a more powerful predictor concerning acquiring early reading ability (Hulme, Muter, & Snowling, 1998). Further, a number of researchers believed that the single strong predictor of reading and spelling skills in the first years of school is the level of phonemic awareness, particularly phonemic segmentation (Gyovai, Cartledge, Kourea, Yurick, & Gibson, 2009)

Before moving to the next section, it should be noted that one of the remarkable benefit of phoneme segmentation skill is to help beginning readers spell words. When students begin segmenting words in order to hear all of the individual phonemes presented, they are beginning to spell (Ouellette & Senechal, 2008). Segmenting phoneme is one of the specific developmental sequence students follow when learning how to spell. Ehri et al. (2001) pointed out that the sequence of skills includes: rhyming, comparing initial phonemes, blending phonemes into words, and segmenting phonemes.

1.4 EFL Beginning Readers

According to King Abdullah II's National Initiative of 1999, English is introduced concurrently with L1 to be taught as a compulsory module right from the first grade in state schools and private schools. Jordanian children have to gradually gain the needed requirements to become proficient in English basic skills including reading.

By the end of the year, it is expected that first graders are able to "read English from left to right, and show understanding of learned simple words about names, objects, actions, and numbers when reading through different activities" (The English Language National Team, 2006., p. 17).

To date, there has been little research about phonemic awareness of Jordanian EFL beginning readers. A research conducted by Al-Tamimi and Rabab'ah (2007) pointed out that Jordanian first graders generally suffer when they deal with English basic skills, and this can be due to their poor phonological awareness of English in which it might be connected to their L1 interference. The researchers investigated the impact of phonological awareness instruction on the development of word- reading ability for EFL first graders in a Jordanian state school. At the end of the study, they concluded that phonological awareness is appropriate for the progress of first-graders' word-reading ability. They further found that explicit phonological awareness instruction is crucial for this development.

In another study, Al-Shaboul et al. (2013) stated that all Jordanian learners are exposed to English as a foreign language right from the first grade and they have the only opportunity to experience their English learning inside formal learning setting. In their study, the researchers investigated whether Jordanian learners could understand the relationship English orthography and its phonemic correspondences i.e. the relationship between letter and sound. They concluded that 25% of the Jordanian beginning learners lack phonemic awareness (Al-Shaboul et al., 2013).

A recent study conducted by (Alshaboul, Asassfeh, Alshboul, & Alodwan, 2014) investigated the possibility of transferring Arabic phonological awareness to learning English; the study examined if phonological awareness in Arabic can support Jordanian students to perform better on the English transfer tasks. The researchers referred to the fact that cross-language transfer is the extent to which learning to read in L2 is facilitated by phonological awareness in L1. All participants who are considered beginning readers were tested using task that include large phonological units such as syllable, onset and rime, on one hand and smaller phonological units, on the other. It has been concluded that cross-language transfer is positively confirmed.

Utilizing from previous research, researchers in another recent study develop and offer an instrument to assess EFL Arab beginning readers' phonemic awareness that addresses phonemic awareness in Arabic language that is the mother tongue of no less than 400 million people. This tool classifies the one hundred participants into three categories. Further, the study highlights the role of KG and reports on words the learners found easy and those difficult to segment. At the end of the study, the researchers suggest that a very large majority of the participants have already developed an acceptable level of phonemic awareness (Al-Shaboul, Asassfeh, Alshboul, & Al Tamimi, 2014).

The importance of phonological awareness in developing reading is the common thread gathered from the aforementioned literature regarding EFL beginning readers. Further, the scholars did not distinguish between phonological and phonemic awareness. However, researchers (Al-Shaboul et al., 2014) offered an assessment tool for Arabic phonemic awareness. The study itself did not assess beginning readers in beginning readers' English phonemic awareness. Although the participants were all beginning readers, the studies mentioned above did not involve EFL beginning readers' phoneme segmentation skill and the use of interactive whiteboard as an instructional tool.

1.5 Interactive Whiteboard and Student's Learning

"The indications are that IWBs can be effective tools for initiating and facilitating the learning process, especially where pupil participation and use of the board is utilized. An important finding is that there is a relationship between IWBs and pupils' views of learning, with visual and verbal-social learning being particularly prominent. The way in which information is presented, through color and movement in particular, is seen by the pupils to be motivating and reinforces concentration and attention." (Wall, Higgins & Smith, 2005, p. 866).

The above quotation clearly indicates that interactive whiteboards as instructional tools have a noticeable impact on learning process. In short, IWBs offered what students actually need to promote and develop their thoughtfulness which will positively reflect on their performance. Moreover, when students are able to combine both visual and aural information, learning process will be facilitated. Learners can then make relations between what they see and what they hear (Smith, Higgins, Wall, & Miller, 2005).

In a study, Smith et al. (2005) clarified how a lesson can be interactive. Students interact with lessons when they physically manipulate texts and other images on the touch screen. NAEYC (2011) pointed out that efficient uses of technology and screen media are engaging, active, hands-on, and should be used as one of many instructional tools to support learning. Being one of the interactive technologies, interactive whiteboard thus encourage a more hands-on approach in classrooms.

An interactive whiteboard can be defined as a large, touch-sensitive board, which controls a computer linked to a digital projector (Smith et al., 2005). Based on the theory of which this review is conducted, one of the several benefits of practicing this technology is that the instructional message is received in two ways; two channels presented as words and as pictures. Joining both words and pictures with emerging learners supports powerful

understanding of the material being offered (Mayer, 2003).

Recent technological tools change the way students think and behave. NAEYC (2011) pointed out that these new technological tools, such as IWB technology, are changing the way students gain knowledge and how they communicate with each other. It is evident that using IWB technology with learners is one way to engage and motivate them in a lesson or activity. In a study conducted by Beeland (2002), it has been found that using interactive whiteboard technology beget the increase of student engagement in the classroom. Further, when students are engaged during lessons, Beeland (2002) concluded that there are fewer behavior issues, students show more positive attitudes, and less time is taken away from instruction.

Like Beeland (2002) study, a study conducted by Smith, et al. (2005) to gauge student engagement. They reported that the surprise factor and the unknown that interactive whiteboard brings to class extremely improved young learners' enthusiasm for learning. The multi-sensory approach offered by interactive whiteboard technology can meet the multiple needs of the beginning readers. For instance, Solvie (2004) shared her experience with an activity given in the interactive whiteboard. She stated that the interactive board allowed for the use of multiple senses which brought a remarkable level of engagement and more extreme understanding of the concepts.

As for the duration of time concerning phonemic awareness instruction, a study conducted by Berg & Stegelman (2003) found that learners should not spend spending too much time on phonemic awareness activities since other language skills need to develop equally. Beginning readers' educators are aware of their students' needs and understand that phonemic awareness is a progressive process. Therefore, it is necessary to ensure that students are developmentally ready to receive the appropriate phonemic awareness instruction at school. Edelen-Smith (1997) pointed out that phonemic awareness activities should be no longer than 15-20 minutes in duration. It should naturally occur in the classroom as well.

The amount of instruction will be different for every student in a classroom when working one on-one or in small groups. The most important consideration is the age of the students. It would be developmentally inappropriate to plan a lesson for five year old students that last longer than ten minutes. In a similar study, Reading & Van Deuren (2007) concluded that phonemic awareness instruction should not be long in duration since their studies found no remarkable gain found when the instruction offered continued longer than ten minutes.

Concerning introducing phonemic segmentation activities to pupils on an interactive whiteboard, the individual developmental levels determine the appropriate duration of the instruction. NAEYC (2011) did not provide any exact amount of time that emergent learners should work with technology. Instead, it has been pointed out that the use of technology in the classroom rests on the age, developmental level, interests, needs, and abilities of each student (NAEYC, 2011).

Solvie (2004) stated that interactive whiteboard technology can be used in classrooms so that lessons can be created to engage and boost students' motivation. Hence, any activity used in a classroom to increase phonemic awareness skill, particularly phonemic segmentation skill, can be created on the interactive whiteboard. In doing this, the lesson will be interactive and engaging.

In the same study, Solvie (2004) concluded that students were more engaged in the instruction when they were provided with sensory experiences using the interactive whiteboard. In another study conducted by Beeland (2002), it was found that students were provided with three different sensory experiences which included visual, auditory, and tactile when practicing activities on the large touch screen. He stated that visual learning can range from pictures and text to more complicated aspects such as animation and video. Activities that include auditory learning involve displaying words on the interactive whiteboard and playing sounds which segment, blend, or isolate phonemes. Students are consequently allowed to physically interact with the interactive board that can help meet the needs of tactile learners.

According to Smith et al. (2005), the academic literature that is available on interactive whiteboards is small in number and growing slowly. However, there are a number of reports and summaries of small-scale research projects in the USA, UK, Canada, and Australia undertaken by individual teachers, schools, and higher education institutions. Research evidence usually comes from interviews, questionnaires, and surveys that all focus on users' perceptions of interactive whiteboard potency.

In Jordan, Jwaifell and Gasaymeh (2013) conducted a qualitative study that examined and reported teachers' use of interactive whiteboard and its features that have impact on their decisions to adopt it in Modern Systems School. The study used Rogers' (2003) diffusion of innovations theory to guide the investigation. It is noted that the study did not involve students' learning achievement in classrooms. The researchers concluded that the extent of teachers' use of IWB is related to their perceptions of the five main attributes: Relative advantages, compatibility, simplicity, trialability, and observability. At the end of the study, the researchers recommended that more attention to training workshops regarding how to involve IWB into the educational process should be offered.

1.6 Conclusion

In brief, it is evident that beginning readers need more exposure to the instructions in phonemic awareness skills, particularly phonemic segmentation skill, to become better readers. Further, all of the aforementioned studies included best practices, but none of them focused on using technology or other tools to offer lessons to students to boost EFL beginning readers' achievement in phonemic segmentation skill. It is evident that there is a clear gap in research where the best practice of using 21st century learning tools are missing, and research of teaching phonemic segmentation skill through the use of interactive whiteboard in EFL beginning readers' classrooms will fill this gap.

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