

Beginning Reading Instruction: Application of Theory and Research to Practice

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Abstract

Learning theories are important as beginning reading teachers strive to meet the diverse needs of many kinds of learners. This article explores the learning principles of three theoretical experts (a) Jean Piaget, (b) Lev Vygotsky, and (c) Maria Montessori. The paper demonstrates the application of these experts' theories related to constructivism and pragmatism educational philosophies, and the process of teaching young children to read. It is concluded, decades of relevant learning theory and beginning reading research exist. It is now time for application of theory and research, bridging what we know into our classroom practice.

Keywords: Beginning reading instruction, Spelling patterns, Linguistically structured text, Piaget, Vygotsky, Montessori, Learning theory, Assimilation and accommodation, Zone of proximal development, Necessary and sufficient, Organization and order, Scaffolding, Authentic practice, Letter-sound reading, Negative transfer

1. Introduction: Three Theoretical Experts

Jean Piaget, Lev Vygotsky, and Maria Montessori are prominent theoretical experts who have impacted the field of childhood education with their theories on learning (Ormrod, 2008; Ozmon & Craver, 2008). Jean Piaget, a Swiss psychologist, spent his lifetime observing children in a natural setting, experimenting and writing about children's construction of knowledge and developmental stages of intelligence (Piaget, trans. 1952; Zhang, 2022). Jean Piaget's learning theories are associated with later philosophies of cognitivism and constructivism (Ormrod, 2008; Ozmon & Craver, 2008; Pass, 2007; Tzuo, 2007; Zhang, 2022).

Lev Vygotsky was a Russian psychologist; his learning theories are associated with pragmatism (Driscoll, 2005) and constructivism (Ozmon & Craver, 2008; Pass, 2007). Similar to Piaget, a major part of Vygotsky's life was spent studying children's cognitive development

(Ormrod, 2008), and the field of linguistics (Grigerenko, 2021). Vygotsky asserted that higher order thinking was not a matter of a teacher filling the student's mind with things to remember, but self-regulation and understanding concepts and patterns to create new meanings (Gredler, 2009).

Maria Montessori was an Italian physician turned educator and psychologist; Montessori worked for decades with children, teaching children to read and write, recording what strategies and materials facilitated learning (Montessori, trans. 1965; trans. 1966; Ozmon & Craver, 2008; Scarpini, 2020). Montessori carried out her first work teaching reading and writing with developmentally disabled children in Rome (Montessori, trans. 1965). The disabled children were then given public school testing along with their "normal" peers and passed (Montessori, trans. 1965, p. 24). Montessori wrote, "Whilst everyone was admiring the progress of my [disabled pupils], I was thinking of the reasons which might have reduced the healthy, happy pupils of the ordinary schools to a level so low" (Montessori, trans. 1965, p. 25). Montessori brought her teaching and learning theories to the public school arena (Montessori, trans. 1965).

1.1 Organization of Article

The learning theories of Jean Piaget, Lev Vygotsky, and Maria Montessori can impact the philosophy and teaching strategies of reading teachers. The first section of this paper describes the seminal theories of Piaget and Vygotsky establishing similarities and differences. Next, the paper presents Montessori's teaching and learning theories, showing there is some diversity between all three experts, and there is much alignment.

The next major section clarifies how the three learning theories of Piaget, Vygotsky, and Montessori relate to educational philosophies of pragmatism and constructivism, and can impact educational philosophies of teachers who teach young children to read. The section on educational philosophy offers specific, concrete examples of theory-in-action, in the realms of the very first steps in beginning reading instruction for children. The section evaluates how learning theories can (a) guide educational philosophies, and (b) influence teaching strategies. The section on theory-in-action illustrates how learning theories, when put to use, facilitate children's ability to learn to read.

The conclusion emphasizes the need for educators to continue to bridge learning theories, reading research, and educational philosophies into actual practice when teaching young children to read. In the future, which includes the practice setting using computer technology, implementing learning theories and educational philosophies might create an era of universal literacy.

2. Jean Piaget's Childhood Development Learning Theory

According to Piaget, learning is not a matter of mere memory; rather, the child constructs knowledge (Ormrod, 2008; Piaget, trans. 1952). Jean Piaget developed his learning principles by observing the child, often his own son; Piaget recorded what he witnessed (Fox & Riconscente, 2008; Piaget, trans. 1952). Piaget wanted to know how intelligence, or cognition, developed. His aim was to study the inner mental thinking of the child through observations of

the child interacting with the environment. A main principle of Piaget's learning theory was, increased cognition was a result of development, experience, and internal mental adaptations (Inhelder & Piaget, trans. 1958; Piaget, trans. 1952; Babakr, Mohamedamin, & Kakamad, 2019). Piaget's theory is often referred to as genetic epistemology (Pass, 2006). To develop the learning principles, rather than formal teaching, Piaget would set up specific environmental interactions and problems for the child to solve (Piaget, trans. 1952).

2.1 Assimilation and Accommodation

Piaget is known for his theory of *assimilation and accommodation* and stages of cognitive development (Agbenyega, 2009; Fox & Riconscente, 2008; Muthivhi, 2010; Pass, 2007; Tzuo, 2007; Babakr, et al., 2019). Important to Piaget's learning theory of assimilation and accommodation is the child brings prior knowledge to each new learning experience. Authentic experience is needed for learning, and, prior knowledge of the child facilitates later learning (Inhelder & Piaget, trans. 1958; Piaget, trans. 1952).

Learning is a *reaction cycle* of adapting mental-thinking to new experiences; the adapting, or accommodation, creates a state of equilibrium for the child (Piaget, trans. 1952). Piaget labels the first part of the intelligence cycle, assimilation. Piaget describes multiple times of watching his son's rooting reflex to nurse, and calls this effortless ability to turn the head and suck, assimilation meaning the learner *knows how to consistently interact* with the environment (Piaget, trans. 1952). Accommodation is using the past assimilated experience when encountering a new experience, adapting the new knowledge into a new scheme (Piaget, trans. 1952). For instance, an infant who finds a lemon wedge who sucks on the wedge first goes through a stage of disequilibrium. Then a new internal mental adaptation occurs: The lemon is not the same as suckling the nipple; the lemon wedge is not warm, sweet milk, but sour. Accommodation is the adaptation of new experiences into a new or revised pattern of thinking; the result is a state of equilibrium (Ormrod, 2008; Piaget, trans. 1952).

2.2 Cognitive Development Theory and Assimilation and Accommodation

Piaget believed all children, no matter from what culture, went through set stages of development (Inhelder & Piaget, trans. 1958; Piaget, trans. 1952). Some of the basic principles of cognitive development are children can think abstractly and can self-regulate to learn (Inhelder & Piaget, 1958; Ormrod, 2008). Using the process of assimilation and accommodation, children are forever experiencing, reflecting and reorganizing new experiences to maintain a final, structured perception of reality (Piaget, trans. 1952).

3. Lev Vygotsky's Childhood Learning Theory of Cultural and Cognitive Development

Lev Vygotsky, like Piaget, spent much of his life observing and studying how children learn (Ormrod, 2008; Vygotsky, trans. 1978). Like Piaget, Vygotsky noted how the environment played an important role in children's learning (Gredler, 2009; Ormrod, 2008). Vygotsky's studies included observing children during social interactions. According to Vygotsky, a social environment with language and social experiences impacted cognitive development (Gredler, 2009; Ormrod, 2008; Vygotsky, trans. 1978). Vygotsky is known for his theory, the *zone of proximal development* (Driscoll, 2005; Ormrod, 2008; Tzuo, 2007; Vygotsky, trans. 1978).

3.1 The Zone of Proximal Development

Vygotsky defined the zone of proximal development (ZPD) as the distance between the potential developmental level and actual developmental level (Driscoll, 2005; Ormrod, 2008; Vygotsky, trans. 1978). Vygotsky further explained, the potential developmental level is determined by problem solving with *guidance* from a capable adult or peer (Vygotsky, trans. 1978). The actual developmental level is determined by *independent* problem solving by the child (Vygotsky, trans. 1978).

The main learning principle behind ZPD is that a child learns best when given tasks he or she cannot achieve independently, but needs adult guidance to achieve (Driscoll, 2005; Ormrod, 2008; Vygotsky, trans. 1978). Vygotsky challenged the notion that true learning must be independent, giving an example that a teacher may solve a math problem at the front of the class. The child then gains insight to independently solve other math problems using the learned concept, transferring the knowledge (Vygotsky, trans. 1978). At first glance Vygotsky's ZPD theory seems to counter the seminal works of Albert Bandura's self-efficacy principle. Bandura postulates students are more motivated to engage in learning activities and learn when there is independent success (Driscoll, 2005; Ormrod, 2008). However, Vygotsky and Bandura's theories have alignment, as Vygotsky's theory postulates, after the initial guidance, the child now has foundational knowledge that transfers to independent problem solving.

3.2 Culture, Social Interaction, and Language

Paramount to Vygotsky's childhood learning theory was how a child's culture, social interactions, and language acquisition created cognitive development (Gredler, 2009; Vygotsky, trans. 1978). Vygotsky would study children's communication with one another, often putting deaf children with hearing children, or children who spoke different languages together to see what they would do (Vygotsky, trans. 1978). Vygotsky's main premise was language development and social awareness, created higher cognitive development (Driscoll, 2005; Gredler, 2009; Ormrod, 2008; Vygotsky, trans. 1978). In contrast, Piaget surmised cognitive development created social awareness (Inhelder & Piaget, trans. 1958).

3.3 Scaffolding and Vygotsky's Learning Theory

Scaffolding is a process of building learning curriculum, activities, and materials in a systematic order in which mastering each skill, leads to the ability to transfer the knowledge to master a higher order skill (Billings & Halstead, 2009; Hmelo-Silver, Duncan, & Chinn, 2007; Ormrod, 2008). Literature links Vygotsky's zone of proximal development (ZPD) principle to the concept of scaffolding (Ormrod, 2008). Vygotsky describes the importance of practice, and how a children can transfer adult guided learning of a skill, like math, into an immediate, independent mastery of other problems of a slightly higher, scaffolded order (Ormrod, 2008; Vygotsky, trans. 1978).

4. Key Similarities and Differences Between Piaget's and Vygotsky's Learning Theories

There are key similarities in Piaget's and Vygotsky's learning theories. In both childhood learning theories, Piaget and Vygotsky asserted the development of the brain plays a factor in learning (Ormrod, 2008). Both theorists believed children construct knowledge. Vygotsky and Piaget asserted an organized, structured environment enhanced learning (Driscoll, 2005; Ormrod, 2008; Vygotsky, trans. 1978).

There are differences between Vygotsky's and Piaget's learning theories. Vygotsky asserted the social and language interactions with the teacher were paramount to creating the organized learning (Vygotsky, trans. 1978). Piaget did not discount the impact of culture or social cues on cognitive development and learning, Piaget asserted rather, it was a young children's prior experience, inner thoughts and developmental stage that created social development (Ormrod, 2008; Piaget, trans. 1952; Tzuo, 2007).

5. Maria Montessori's Childhood Learning Theories

In contrast to both Piaget and Vygotsky, Montessori engaged in observing children explore the environment, and formally teaching children about the environment with specially structured learning materials (Montessori, trans. 1965; trans. 1966). In Montessori's learning theory she claimed to notice a time-period of when young children—the two to five-year-old—had a capacity for accelerated learning (Montessori, trans. 1965; trans. 1966). The learning principle is often referred to as the absorbent mind of young children (Montessori, trans. 1965; Ormrod, 2008).

5.1 Organization, Scaffolding, and Authentic Practice

Similar to Piaget and Vygotsky, Montessori affirmed organization and structure fostered learning in children (Montessori, trans. 1965; trans. 1966; Scarpini, 2020). Montessori claimed the teacher's role was to specifically scaffold the environment to enhance learning and independence. Montessori took Vygotsky's concepts of scaffolded guidance to a level of scaffolded teaching materials. Important to each theorist, Piaget, Vygotsky, and Montessori was how authentic experience and repeated practice creates learning (Inhelder & Piaget, trans. 1958; Montessori, trans. 1965; trans. 1966; Piaget, trans. 1952; Vygotsky, trans. 1978).

5.2 Isolating a Concept to Facilitate Learning

Montessori wanted children to learn about concepts, such as length, width, weight. An example of a teaching tool to teach a two-year-old about *length* was a hand crafted, five inch wide, two foot long, two inch in depth, smooth wood piece. Within this long wood piece, there were 20 dowels, or pegs which fit flush within precise holes. Each wood dowel is identical in color, shape, circumference—yet one quality is different—the length. In fact, *each hole* in the two-foot-long wood piece is a different depth—or length—corresponding with only one dowel. The child turns the long wood piece over, dumping out the 20 dowels. Then the child begins putting the dowels back into the holes in the block of wood. Even the two-year-old, Montessori wrote, becomes intent on the task and self-corrects in finding the proper hole in which each dowel fits flush (Montessori, trans. 1965; trans. 1966). According to Montessori, children learn

best when one concept for learning—like length—is singled out, keeping all other qualities of the learning material constant.

5.3 Montessori's Learning Principle: Necessary and Sufficient

Despite Montessori being one of the few theorists who had empirical data proving successful learning outcomes (Ormrod, 2008), some scholarly books like Driscoll (2005) do not mention Montessori's learning theory. Many authors tout Montessori's learning theories (Cossentino, 2006; Lockhorst, Wubbels, & Van Oers, 2010; Ormrod, 2008; Peters, 2008; Peterson, 2010; Soundy, 2003; Tzuo, 2007). Surprisingly the authors fail to mention a main guiding principle underlying Montessori's learning theory, the concept of providing what is *necessary and sufficient* for children to independently learn.

Montessori claimed the task for the teacher was to determine, what is both necessary and sufficient for independent learning (Montessori, trans. 1965; trans. 1966). Montessori asserted the primary role of the teacher was to provide children with the necessary environment, or materials, so children could easily learn. Providing the necessary materials, included omitting *unnecessary* items and input which interfered with learning. Montessori wrote how over-abundance of information debilitates and retards progress in learning. Montessori asserted how instead, materials should isolate out a specific quality, like length, to accelerate learning (Montessori, trans. 1965; trans. 1966).

Montessori and Vygotsky show stark differences in their educational theories. Vygotsky's theory on zone of proximal development (ZPD) asserted it was best to create learning activities out of reach of the individual child's capabilities. During learning, the child should be guided by the adult (Vygotsky, trans. 1978). In contrast, Montessori argued the teaching materials should foster independent learning, requiring little or no adult direction.

5.4 Criticisms of Montessori's Learning Theory Towards Diversity

There is criticism that Montessori's controlled environment and learning materials does not reach out to the diversity and individuality of each child (Cossentino, 2006; Montessori, trans. 1965). Montessori defended her learning theory of a controlled environment. According to Montessori, the only way *to* understand a child's individual learning needs was to keep all other variables constant; only then can the teacher notice the unique differences of how each child learns (Montessori, trans. 1965; trans. 1966).

6. Learning Theory, Educational Philosophy, and Teaching Reading

Learning theories should form the foundation of a teacher's educational philosophy (Ozmon & Craver, 2008). An educational philosophy is an expression of how a teacher views teaching and learning (Ozmon & Craver). A teacher's educational philosophy in turn informs the teacher on teaching designs, how the teacher views the teacher role, and how the teacher views the student role (Ozmon & Craver). An educational philosophy guides a teacher in curriculum building, use of learning materials, and use of specific learning activities (Billings & Halstead, 2009; Ozmon & Craver, 2008).

The reading teacher, who formally teaches preschoolers and young children to read, can utilize the underlying learning theories of Piaget, Vygotsky, and Montessori to craft a teaching and learning philosophy. Two major educational philosophies that align with Piaget's, Vygotsky's and Montessori's childhood learning theories are constructivism and pragmatism.

6.1 Constructivism and Pragmatism

Constructivism educational views emerge from Piaget and Vygotsky learning theories (Driscoll, 2005; Ozmon & Craver, 2008; Vygotsky, trans. 1978) while pragmatism aligns with Montessori learning theories (Ozmon & Craver, 2008; Frierson, 2017). A pragmatic philosophy holds there can be an absolute truth to reality, what is known, and yet, the reality and knowledge can change when impacted by experience and new knowledge (Driscoll, 2005; Ozmon & Craver, 2008). Constructivism, as an educational philosophy, supports learning as an active interaction between the learner's mental thinking process, and the concrete environment (Billings & Halstead, 2009; Ozmon & Craver, 2008). Each philosophical view of pragmatism and constructivism is related to the fact that knowledge is developed through authentic experience, that learning is constructed by the learner (Billings & Halstead, 2009; Ozmon & Craver, 2008).

7. Application of Theory and Philosophy in the Practice of Teaching Children to Read

Itin wrote "A philosophy is only useful if it can be translated into action" (1999, p. 94). To evaluate the impact of the learning theories on a reading teacher's educational philosophy, theories of Piaget, Vygotsky, and Montessori must also be put into action. If the philosophy of teaching and learning does not align with perspectives of the learning theories, the actual teaching strategies will fall short (Benner, Sutphen, Leonard, & Day, 2010; Billings & Halstead, 2009).

When put into action, the learning theories of Piaget, Vygotsky, and Montessori combine to make a powerful learning to read curriculum. Following the experts' theories, the educational philosophy of a reading teacher has three major critical principles.

- The first principle is: The reading teacher must give children the necessary tools or information so children can proceed and learn independently. Instead of children using rote-memorization to learn, children must have the necessary information and tools, to be able to independently construct knowledge.
- The second principle is: The learning-to-read materials must be scaffolded. Scaffolding helps children apply the prior constructed knowledge and experience to each new learning experience so new constructed patterns can create new meanings.
- The third principle is: Children must have authentic reading experience; children must practice the authentic action of reading, independent print-to-sound processing and comprehension of print.

In using these three guiding principles (a) providing necessary information, (b) scaffolding the learning to read materials, and (c) creating opportunities for authentic reading practice, the reading teacher is not teaching children *about* reading, but is teaching children *to* read.

8. The Need for Authentic Experience of Practicing Reading

Taking the learning principles of Piaget, Vygotsky, and Montessori *learning* is not a process of rote-memorization but a thinking skill. Likewise, to learn to read, the practicing of reading should not be a rote-memorization task. Reading is an independent act of looking at print and responding with the proper sound-translation to then comprehend the print (Eldredge, 2005; Kuhn, Schwanenflugel, & Meisinger, 2010; National Institute of Child Health and Human Development [NICHD], 2000).

8.1 Non-Authentic Reading Practice

Many strategies of teaching children to read begin with initially teaching children to name letters (Adams, 1990; Bracken & Crawford, 2010; Dickinson & Neuman, 2006; NICHD, 2000; Piasta & Wagner, 2010). Learning to name letters does not often help children learn to decode print (Adams, 1990; Heikkila, Narhi, Aro, & Ahonen, 2009; National Institute for Literacy [NIFL], 2008; NICHD, 2000). Authentic reading does not involve looking at a picture to know a word, nor is reading repeating words a teacher has read. Learning to read does not involve the process of naming letters.

Many beginning reading teaching strategies focus on helping children learn and understand how a speech sound, listening to the spoken sound, can be represented by print, a sound-to-print process (Adams, 1990; Dickinson & Neuman, 2006; Girolametto, Weitzman, & Greenberg, 2012; Kirk & Gillon, 2009; NICHD, 2000). There are many learning-to-read activities, called *phonemic awareness* activities, which focus on teaching children to listen to spoken words and then isolate out the separate speech sounds heard in the spoken word; for instance, to listen to the spoken word “cat” and then learn to isolate out the /a/ sound (Adams, 1990; Dickinson & Neuman, 2006; Girolametto et al., 2012; NICHD, 2000). These phonemic awareness activities involve a sound-to-print process (Adams, 1990; Dickinson & Neuman, 2006; Girolametto et al., 2012; NICHD, 2000).

Authentic practice of reading is not a sound-to-print process. Authentic experience of reading involves a print-to-sound process, the practice of looking at print and responding with the proper sound-translation. Children learning to read, must practice the necessary print-to-sound processing.

8.2 Necessary and Sufficient Principle and Negative Transfer Theory

Applying Montessori’s necessary and sufficient principle, learning to *name* a letter is not a process of reading and is unnecessary information. Yet, across the U.S. an initial educational standard in preschools and kindergarten and grade 1, is to teach children to look at letters and name letters (Bracken & Crawford, 2010; Wolf, 1990-1998; 1998). Rationale for teaching children to name letters are (a) tradition, (b) letters need a label, (c) it is easier for children to pronounce a letter name as opposed to a letter sound, and (d) the letter name can help children learn a little about some letter sounds (Adams, 1990; Dickinson & Neuman, 2006).

A letter can be identified and labeled by its basic sound translation (L. Verhoeven, personal communications, March 23, 2011; Wolf, 1998; 2014). There is no found empirical evidence

that it is easier for children to learn to pronounce letter names versus letter sounds, for instance “em” versus “mmm” (Wolf, 2014). Further, according to the National Beginning Reading Teacher Survey conducted throughout the 1990s, over 75% of the 400-plus kindergarten and grade 1 teacher -respondents reported letter name knowledge is not necessary for reading; letter name knowledge is useful for spelling (Wolf, 1990-1998; 1998).

8.3 Negative Transfer

Considering Montessori’s theorem of necessary and sufficient, our national and cultural tradition of teaching young children to look at letters and name letters slows and makes difficult the process of learning to read. Likewise, the over-abundance of giving children letter-name information simultaneously with letter-sound instruction can cause confusion in the process of learning to read. The confusion is a result of negative transfer. Human learning theories in general, explore the phenomenon of *negative transfer* (Ormrod, 2008).

Negative transfer is when an initial learned response to a stimulus must be dropped to re-learn a new, more important, needed response (Ormrod, 2008). Negative transfer slows the process of learning and makes learning difficult (Ormrod, 2008). In respect to learning to read, when children initially and repeatedly learn to look at letters and respond with letter names, this initial learned response must be dropped or unlearned when it comes to learning to read.

Learning to name a letter helps children learn about letters, and *about* reading. Letter naming activities do not often help children learn *to* read (Adams, 1990; Heikkila et al., 2009; NICHD, 2000). The letter-sound response is the more important needed knowledge for the action of reading (Adams, 1990; McCandliss, Beck, Sandak, & Perfetti, 2003; Turnbull, Bowles, Skibbe, Justice, & Wiggins, 2010; Wolf, 2014).

Biemiller (1977-1978) determined long ago how children could decode single letters; and it was the children who were the faster single letter decoders, or letter-sound readers, who were the faster word decoders. A study on growth of word decoding skills by Verhoeven and Leeuwe (2009) used a sample of 2,819 Dutch children. Verhoeven explained, “Dutch children do not learn letter names. They learn letter sounds at the moment they start to learn to read” (L. Verhoeven, personal email communications, March 23, 2011). When it comes to teaching young children to read, letter sound responses or letter-sound reading is the necessary and sufficient information to foster authentic print-to-sound decoding practice.

9. Letter-Sound Reading: Necessary Information, Scaffolding, and Authentic Practice

The reading teacher can follow Piaget’s, Vygotsky’s, and Montessori’s teaching and learning principles, down to minute details when constructing children’s initial reading lessons. Following Vygotsky’s scaffolding principle, and zone of proximal development (ZPD), and Montessori’s principle of providing necessary information, the first step in teaching children to read would be for the teacher to guide children with the simplest level of reading, not naming a single letter, but decoding or *reading* a single letter. Children who decoded single letters quickly (letter-sound readers) were the faster word decoders (Biemiller, 1977-1978) and, children who were letter-sound decoders (letter-sound readers) were the better

consonant-vowel-consonant (CVC) word decoders. For example words like: *map, hug, lip, beg, mom* (Wolf, 2014).

9.1 Theory Into Action: The Three Step Letter-Sound Reading Lesson

Research points to the value of scaffolding, showing a direct relationship to educational achievement (Hmelo-Silver et al., 2007). A three-step reading lesson in which children learn to *read* single letters can be scaffolded and can follow Montessori's principle of necessary and sufficient, and Vygotsky's ZPD principle. Following Piaget's principle of assimilation and accommodation, children's very first reading lesson can be a presentation of three letters to accommodate, for instance 's', 'o', and 'm'. Per Vygotsky's learning theory, the teacher is an integral part of the very first guided, scaffolded reading lesson. The three-step reading lesson takes less than two minutes (Wolf, 1998; 2014).

9.2 Step One: See if Children Can Repeat a Basic Letter Sound

Three lower case letter cards can be put in front of the child: 'o', 's', and 'm'. The teacher keeps explanations short and actively involves the child, pointing to each letter to provide the necessary information, "When I read this letter, it says /s/. Can you say /s/?" This step determines if the child can repeat /s/. The process is repeated with /o/ (short sound) and /m/.

The teacher is using language and social interaction, guiding the child to letter-sound read, or decode a letter. The guided interaction follows Vygotsky's ZPD principle. Following Piaget's learning theory the child must assimilate and accommodate each new letter, differentiating between the letter, /s/, /o/, and /m/. The teacher offers only the necessary information, "This letter says /s/", following Montessori's principle of necessary and sufficient. Most children who can talk can easily repeat letter-sounds (Wolf, 1998; 2014).

If a child names the letter, which often occurs (Wolf, 1998; 2014), the reading teacher can offer praise, "Nice job! You know the letter name; we are learning about reading today. We are going to learn to *read* the letter; we are learning the sound the letter makes." After the child repeats the letter sounds, the scaffolded lesson continues.

9.3 Step Two: See if Children Can Point to a Letter That the Teacher Reads

The teacher keeps the child actively involved with the learning materials. The child can shuffle the letter cards. The teacher explains, "Now *I* am going to read a letter, and you point to the letter I am reading... /s/." If the child cannot correctly point to the letter 's' and points to 'm', using Vygotsky's principles of language and guidance the reading teacher can offer a connection, "/s/ looks like a ssssnake." Using Montessori's principle of providing necessary and sufficient instruction, the teacher can individualize teaching determining what additional information is needed for each child.

The learning principles of Montessori, Piaget and Vygotsky, along with constructivist and pragmatic educational philosophies stress that children must authentically practice what they are trying to master. *Hearing* a letter-sound the teacher voices and finding the corresponding letter, moving from sound-to-print, is *not practicing reading*. Reading is a process of looking at print and responding with the correct sound translation, moving from print-to-sound. The

pragmatist teacher takes the reading lesson a step further to the authentic experience of practicing reading.

9.4 Step Three: See if Children Can Independently Look at a Letter and Respond With the Basic Sound Translation (Appendix A)

The next step in learning to read the three letters, ‘s’, ‘m’, and ‘o’ is the reading teacher will explain, “Now I am going to point to a letter, and *you* read the letter.” The teacher points to each letter to see if the children can respond /s/, /m/, /o/. The teacher remains silent following Montessori’s learning principle of not overburdening the child with unnecessary talking. Again, if the child cannot read a letter, using Vygotsky’s ZPD principle of adult guidance, the teacher can offer simple verbal and visual cues. The reading lesson becomes individualized, and as Montessori hypothesized, the teacher can discover the necessary information needed for each child.

The three-step letter-sound reading lesson provides children with the necessary information. The lesson is scaffolded, highly organized, starting with the easiest response progressing to the hardest response (a) repeating a sound the teacher voices, (b) hearing a letter-sound the teacher voices and pointing to the correct corresponding letter---sound-to-print processing, and finally (c) practicing the more complex print-to-sound process---looking at a letter and independently responding with the correct sound translation. The reading lesson fosters authentic decoding or letter-sound reading practice. Children are experiencing the authentic print-to-sound process of decoding print. The main learning theories and principles of Piaget, Vygotsky, and Montessori are put into action. Preschool children can learn to read 3 letters in less than 2 minutes (Wolf, 1998; 2014). Because the simple truth of the lesson—letter-sound reading—the letter-sound reading knowledge is most often retained a week later without any additional lessons (Wolf, 2014).

10. Teaching Children to Read Words: Authentic Reading Practice

Once children have learned to read 20 letters, children have been given the necessary tools to begin reading simple consonant-vowel-consonant (CVC) words (Wolf, 2014; Wolf, 2016). Children who are first learning to read words should not always be told by the teacher what a word ‘says’. Learning to read would become an endless rote-memorization process. Instead, following the constructivist view, based on Piaget’s, Vygotsky’s, and Montessori’s learning theories, children should be encouraged to construct words independently, the practice of authentic reading. If reading instruction is scaffolded, and children know how to read individual letters, children have the tools to begin constructing, or decoding, over 240 simple CVC words (Wolf, 1998; 2014; 2016; 2020).

The many simple words have only *one spelling pattern* (Appendix B) the most basic spelling pattern in our written language, the CVC pattern (Fries, 1962). The importance of children being able to easily decode the most basic spelling pattern in our written language cannot be overstated. As Adams wrote so long ago, “weakness in basic decoding skills may be the most common and can be the most debilitating source of reading difficulties” (1990, p. 234). A grade 1 teacher echoes Adams’ words and describes the chilling reality:

“Children can learn to read many words by sight. But if somewhere along the way they do not learn to decode, they will not learn to read. It’s these kids who get held back, and these same kids who drop out of school. You get so you can predict which ones it’s going to be”

(M. Nicholson, personal communication, March 20, 1998; Wolf, 1998, p. 17).

Continuing to apply expert learning theories, children’s first word reading attempts can be the authentic practice of decoding. Children can begin to make reading an automatic habit.

10.1 William James, Reading Researchers, and Authentic Practice

Pragmatist William James, in his seminal works *Talks to Teachers*, embodies the pragmatic view of authentic practice, urging teachers to “*make automatic and habitual, as early as possible, as many useful actions as we can*” (Ozmon & Craver, 2008, p. 150). The words of William James foretell reading researchers’ agreed claim: The skill *all* good readers possess is a subconscious, automatic ability to process print (Adams, 1990; Dickinson & Neuman, 2006; Eldredge, 2005; Kuhn et al., 2010; NICHD, 2000). The skill all beginning readers need to foster is an automatic habit of print-to-sound processing. Helping children read the most basic spelling pattern in our written English language is a way to create success. The success links back to the learning theories of Piaget, Vygotsky, and Montessori. Maria Montessori especially had a personal interest in the philosophical writings of William James and would often cite James in her own works (Frierson, 2017).

10.2 Authentic Practice of Silent Reading and Assessing Reading Comprehension

The reading teacher can help the young child practice silent reading. For instance, instead of having the child look at pictures to read a word, have items or toys out on a table: bat, cat, hat, mat, and a rat. Present the child with a word, *hat*. Let the child silently read the word and then point to or choose the object which he or she has read. This way the child can practice silent reading and reading comprehension can be immediately checked by the teacher.

10.3 Isolating a Concept to Facilitate Learning to Read

Piaget wrote about the child’s cognitive level *Substage III-A*. “At the lower formal level, Substage III-A, the child is able to separate out the factors when he is given combinations in which *one* of the factors varies while the others remain constant” (Inhelder & Piaget, trans. 1958, p. 73). Piaget’s theorem is applicable to learning to read. Piaget’s theorem aligns with Montessori’s learning principle of isolating one factor in the environment to accelerate learning.

The beginning reading teacher should make the very first word reading lesson as easy as possible. Children’s very first word-reading lesson can begin by reading /a/ words: *bat, cat, fat, hat, mat, pat, rat, sat*. Each ending of a word remains constant _ at. Children naturally begin to isolate the beginning letter, reinforcing the single truth of the isolated concept, /b/, /c/, /f/. Some children’s initial word reading lessons confirm Logan’s (1997) *instance theory* of automaticity (automatic word reading). After one guided attempt at reading the word *bat*, some children then automatically and fluently can read the words *cat, fat, hat, mat, pat, rat, sat* first time seen

(Wolf, 2014). These simple CVC words can be put into simple stories to offer more language, social interaction and checking of reading comprehension.

11. Organization and Order Facilitates Learning

Charles Fries was a linguistic scientist who wrote about teaching children to read (Fries, 1962). The seminal works of Charles Fries (1962) shows application of the learning theories of Piaget, Vygotsky, and Montessori, in particular the theorists' principles of the organized materials to facilitate learning. Fries wrote how it is essential for a reading teacher to organize and sequence reading materials so each new reading experience is built on children's prior reading experience (1962). The prior experience and gained knowledge facilitate later, more complex learning. The materials to be organized are the *spelling patterns* children read.

According to Fries (1962) the sequence of spelling patterns for children to assimilate and accommodate should start with consonant-vowel-consonant (CVC) words. Although there are approximately 240 CVC words, these words represent only *one* spelling pattern (Appendix B). Research has shown that children who could read simple CVC spelling patterns in kindergarten were still the better readers in 6th grade (Verhoeven & Leeuwe, 2009).

Following Piaget's, Vygotsky's, and Montessori's theories of organization and order, and following linguistic science, a next spelling pattern to be introduced to children would be the consonant-vowel-consonant-consonant (CVCC) pattern. As Vygotsky surmised, the reading teacher can guide the children to read the CVCC pattern-word *duck*. The children can apply the new spelling pattern concept to instantly, and most often independently, read many new words with the same spelling pattern: luck suck, tuck: back, Jack, pack, sack, tack: deck, neck, peck; Dick kick, lick, pick, Rick, sick; dock, lock, rock, sock (Wolf, 1998).

The effective reading teacher follows the learning principles of organization and order. Sequencing the reading of spelling patterns helps children master reading each spelling pattern, and gives children the ability to transfer the knowledge to independently master reading the higher order spelling pattern. The scaffolding of learning materials and activities enhances independent learning (Hmelo-Silver et al., 2007). The prior experience of reading the CVC spelling pattern transfers to an ability to read the new, CVCC spelling pattern (Wolf, 1998). Piaget would label the instant reorganization of the spelling-pattern-environment as accommodation. Montessori's, Piaget's, and Vygotsky's principles of self-regulation, learning new patterns, and independent learning are put into action.

12. Spontaneous Learning and Pragmatism

Piaget, Montessori, and Vygotsky all wrote about witnessing spontaneous learning in children. Piaget wrote about children's rapid, instantaneous intellectual reorganizations (trans. 1952). Vygotsky (trans. 1978) wrote about children's spontaneous discoveries and organized thinking. Montessori wrote how spontaneous intellectual growth was an inner mental working of the child organizing the environment, an inner mental working that could be witnessed (trans. 1965; trans. 1966).

Children themselves often voice the spontaneous intellect when learning to read, “I sounded it out inside my brain so fast!” Voiced by a four-year old who read *zigzag* first time seen. “I said it [the word, *sat*] in my head, and then it came out my mouth!” “I hear the words in my mind and then I say them out loud,” voiced by a 4-year-old after independently reading the words *man, Dan, ran, fan, can* first time seen (Wolf, 1998; 2014; 2018).

The concept of orderly thinking and spontaneous development is a part of pragmatism philosophy from John Dewey (Dewey, 1916; Ozmon & Craver, 2008). For the reading teacher who follows a pragmatic and constructivist philosophy, the role is to organize the reading materials and spelling patterns to facilitate the orderly thinking and spontaneous growth. The pragmatic-constructivist philosophy has a high impact on teaching a child to read as children use, not their memory to read, but their minds.

13. Learning to Decode Words Versus Read Words

Many beginning reading programs suggest teachers initially focus on teaching children oral language skills (Adams, 1990; NIFL, 2008; NICHD, 2000). The rationale is important and based on reading researchers’ agreement that children are not reading if there is no comprehension of the decoded word (Adams, NIFL, NICHD). Some reading teachers express:

“It is not good to teach a 4-year-old to read the word ‘nod’. The child does not know what ‘nod’ means, thus the child is only decoding a meaningless word. The first step in reading instruction is to give children oral language experience so children can learn the meanings of many words” (Wolf, 1998, p. 90).

Teaching children the meanings of words will not teach children how to read. Rather, teaching children how to read, or decode, leads to opportunities for children to learn the meanings of many words (Wolf, 1998; 2014). Teaching children how to read is one of the best ways to improve speaking vocabulary (Adams, 1990; Dickinson & Neuman, 2006; Wolf, 1998; Wolf 2014). The following examples demonstrate how decoding a word leads to reading a word; reading comprehension.

Most often when children are first learning to read words, the children like to immediately prove they understand what has been decoded (Wolf, 1998; 2014): “Tub. Like a bath tub!” “Ruub. Rub! I like to rub my cat’s tummy.”

Children are often silent when they only decode a word, not knowing the meaning (Wolf, 1998; 2018). When 4-year-old Hannah is reading the /u/ book (Appendix B) to her mother, Hannah reads “l—ug, Lug.” Hannah asks, “What is a lug?” Hannah’s mother describes having to lug a big suitcase around. Later that day, Hannah is asked to pick up toys she has left out in the living room. Hannah responds, “Oh no, I don’t want to lug my baby’s cradle up the stairs to my room” (Wolf, 1998, p. 90). Teaching young children to read creates opportunities to teach children the meanings of words.

14. Linguistically Structured Texts, or Scaffolded Reading Materials

The National Reading Panel reported a surprising gap in reading research on linguistically structured texts, or decodable beginning reading basals; the Panel called for more research

(NICHD, 2000, p. 2-137). The gap may be due to the findings that few linguistically structured beginning reading textbooks exist (Wolf, 2014; 2020). The lack of linguistically structured texts may be due to a collective, long-standing culture of beginning reading experts writing about linguistic text with a slightly negative tone.

On page 47 of *Becoming a Nation of Readers* (The Report of the Commission on Reading, 1985) there is mention of, "...beginning readers comprised of deadly sentences such as, "Dan had a tan fan.". In *Beginning to Read: Thinking and Learning about Print* (Adams, 1990, p. 322), there is a sentence "First, the very mention of phonograms or word families will, for some, raise memories of the so-called "linguistic" programs for beginning reading and of such notorious text offerings such as: The pan is on the van..." The main school of thought was, simple sentences like: *Dan ran* or, *The man ran* would stifle children's motivation to read, or mix the children up with such similar spelling-patterns (Adams, 1990; The Report of the Commission on Reading, 1985).

Yet, decades of experience teaching preschoolers to read proves otherwise (Wolf, 1998). Children want to read the simple stories because (a) the children *can* read the stories independently and successfully during their very first reading attempts, and (b) the very first sentences and stories are simple enough for a 4 and 5-year-old to read slowly and still comprehend (Wolf, 1998; 2014).

Linguistic basal author Donald Rasmussen recalled how he was accused of offering children stilted text and stories that would kill any desire to want to read (D. Rasmussen, personal communication, letter, April 10, 1992). Rasmussen found the opposite to be true. The children enjoyed reading, and wanted to keep reading the simple books and stories because:

- The children do not have to be told what a word 'says', but could independently construct the words.
- Children can independently successfully read and comprehend the stories with little or no help from the teacher.
- Children know they are reading and not just memorizing words, which sparks a desire for the children to want to read more and more.
- The texts move from basic spelling patterns to more and more complex spelling patterns.

(D. Rasmussen, personal communication, letter, April 10, 1992)

14.1 Auto-Education and Self-Regulation

Montessori witnessed and wrote about children's auto-education with her organized and structured learning materials (Montessori, trans, 1965, trans, 1966). Vygotsky wrote how with a scaffolded learning environment, once a teacher gave initial guidance, then children would gain conceptual knowledge that transferred to independent learning (Vygotsky, trans, 1978).

Auto-education can be witnessed when young children are presented with linguistically structured text (Wolf, 1998; 2014). Using the linguistic beginning readers written by Donald

Rasmussen and Lynn Goldberg (1976; 1985), the teacher says only, “This word is *mow*.” Children can then independently read *row, bow, low, blow, crow, grow, show, slow, snow, throw, fellow, yellow, shadow, window* (Wolf, 1998; 2014). Next, children read the words within the context of stories (Wolf, 1998).

As Vygotsky asserted, the organized learning environment, in this case spelling patterns, creates a self-regulation, and auto-education. Learning to read becomes, not a task of memory, but a cognitive understanding and transferring of knowledge to new patterns and concepts. To help teach children to read, highly organized, linguistically structured basals, like Rasmussen’s and Goldberg’s (1976; 1985) are superior to some of the 2014 offered basals (Scott Foresman Pearson, 2014; Houghton Mifflin Harcourt, 2014) which randomly introduce single words, and haphazardly introduce un-sequenced groups of words with different spelling patterns for children to attempt to read.

15. Educational Philosophy and Democracy

The learning theories of Piaget, Montessori, and Vygotsky emphasized that knowledge is constructed by children through authentic experience (Montessori, trans. 1965; trans. 1966; Piaget, trans. 1952; Vygotsky, trans. 1978). The reading teacher must apply the learning theories to the actual practice of reading instruction. The learning theories fuse with the educational views of pragmatism and constructivism. The educational philosophy drives the reading teacher’s every action, lesson plan, and use of reading materials. The learning theories of Piaget, Vygotsky, and Montessori can directly and profoundly impact the educational philosophy of the reading teacher. The outcome is empowering young children to be able to practice authentic reading to learn to read, to then be able to read to learn.

Reading to learn is the process of becoming educated (Ozmon & Craver, 2008). As John Dewey asserted so long ago, education leads to a democratic society (Dewey, 1916; Ozmon & Craver, 2008). The reading teacher, by teaching young children to read helps create a fair and democratic global-society.

16. Conclusion

Learning theories form the foundation of an educational philosophy (Ozmon & Craver, 2008). Learning theories of Piaget, Vygotsky, and Montessori show similarities; children learn through authentic experiences and the goal of education is to produce independent learners. Piaget, Vygotsky, and Montessori all held, to enhance learning, the environment needs organization and structure; children need authentic practice. To learn, children use self-regulation and use previous knowledge to construct new knowledge. In relation to learning to read, the new knowledge is new scaffolded spelling patterns; specifically sequenced spelling patterns based on linguistic science. The linguistically sequenced texts, or scaffolded texts, are often referred to as decodable texts (NICHD, 2000).

The main goal of the reading lesson is for the beginning reader to practice the authentic act of reading so reading becomes an effortless habit. To be an effective beginning reading teacher, the teacher must put underlying learning theories into practice. The pragmatic and constructivist education philosophy of a reading teacher is directly affected by learning

theories, down to every word spoken and every structured reading lesson. The combination-philosophy includes assumptions that knowledge is constructed using internal processes and experience (constructivism); knowledge is a continual cycle of experience, constructing knowledge, reflecting and reorganization of new knowledge (pragmatism).

16.1 Technology

There are findings that computerized reading programs to help children learn to read, have had no better outcomes than classroom strategies (Edens, 2006; Paterson, Henry, O'Quin, Ceprano, & Blue, 2003). The reading teacher who intentionally structures and scaffolds the reading materials following learning theories of Piaget, Vygotsky, Montessori, and linguistic science may reap success. If the learning principles are put into a new computerized reading program, using automated speech recognition, auto-education in learning to read may be the result. Computerized learning-to-read programs, using learning principles of Jean Piaget, Lev Vygotsky and Maria Montessori, coupled with linguistic science, may be the beginning of a new era of universal literacy.

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Appendix A. Basic Letter-Sound Translations

Letter	Pronounced as heard in the word
/a/.....	cat
/b/.....	bat
/c/.....	can
/d/.....	dog
/e/.....	hen
/f/.....	fun
/g/.....	gum
/h/.....	hat
/i/.....	sit
/j/.....	job
/k/.....	kid
/l/.....	lip

/m/.....	mom
/n/.....	nut
/o/.....	top
/p/.....	pan
/q/.....	quit
/r/.....	run
/s/.....	sat
/t/.....	top
/u/.....	sun
/v/.....	van
/w/.....	wet
/x/.....	box*
/y/.....	yes
/z/.....	zip

*/x/ = /k/ and /s/ together: /x/ =/ks/

(Adams, 1990; Bowey, 2006; Fries, 1962; De Graaff et al., 2009; Gates & Yale, 2011)

Note: a letter-sound is denoted in print with slash marks: /s/ = sssss

Appendix B. Consonant-Vowel-Consonant (CVC) Basic Spelling Pattern**/a/ book**

can bat hamcab bag bad cap gal gas
Dancat Pam dab gag dad gap Hal
fan fat ram gab hag Dadlap pal
manhat Sam jab lag had mapAl
Nanmat yamlab nag lad tap
pan pat am tab rag madzap
ran rat sag pad
tan sat tag sad
van at wagadd
an

/o/ book

mom con cot bob cog cod bop off
Mom Dondot Bobdog god cop
Tom Rongot cob fog Godhop
on hot job hog nod mop
jot lob jog pod pop
lot mob log rod sop
not rob odd top
pot Rob
rot sob

/u/ book

bun but bum cub bug bud cup bus
fun cut gum hub dug cud pup Gus
gun gut hum nub hug dud pus
pun hut rum pub jug mud us
run jut sumrub lug
sun nut yum sub mug
nun rut tub rug

/i/ book

fin bit dim bib big bid dip ill
kin fit him fib dig did hip sis
pin hit Jim rib fig hid lip quiz
sin kit Kim jig lid nip
tin lit rim pig lid rip
win nit Tim rig Sid sip
in pit wig tip
quit zip
sit
it

/e/ book

Ben bet hemwebbeg bed pep Les Mel
den get ebb keg fed Wes Nel
hen jet leg Jed yes elf
Kenlet Meg led elk
menmet peg Ned elm
pen net Peg red
ten pet Ted
set wed
vet Ed
wet
yet

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