The Importance of Executive Function Skills in Literacy Development

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In March of 2020, just as the flowers of spring began to open, our schools began to close; while nature reawakened outside, we were hunkered down inside. In the months and years that followed, educators have been thrust into scenarios never attempted — fully remote learning; hybrid learning schedules; or blended learning, with some children physically coming into classrooms and others connected to the same class from the safety of home, while one adult simultaneously (and miraculously) managed both groups. None of us understood what impact the global pandemic would have on us professionally or personally and, in many ways, we are still trying to comprehend this. However, it has been widely reported that most adults have had—or are still having—difficulty with anxiety, concentration, motivation, planning, or keeping emotions in check (Javed et al., 2020). Because of the hardships and trauma associated with the pandemic, adults have had to actively utilize our built-in set of high-level cognitive skills, known as executive function (EF) skills.

What Are EF Skills?
According to neuroscientist, Kelly Cartwright, “just as a chief executive of a company sets goals ... and manages operations to achieve those goals, our executive skills are what we use to engage in self-regulated, goal-directed behavior in any area of life” (2015, pp. 6–7). To use another analogy, the Center on the Developing Child at Harvard University (2011) likens our EF skills to an air traffic control center that manages complex operations at a busy airport. For most adults, EF skills are so well-tuned that they go largely undetected as they work in the background helping us manage our personal and professional lives. EF skills begin to develop just after birth and are shaped slowly over the next 25 years. This means that because brain’s control mechanism is far from new. First discussed as early as the 1840s, it was the period between 1950 and 1980 that neuroscientists became more interested in defining the concept of executive functions. As with nearly all things human, there are inconsistencies in how these skills are named and defined. In the literature of cognitive psychology and neuroscience, they can be known as executive control processes, executive functions, or executive function skills. Likewise, the number and names of the actual skills can vary from 5 or 6 skills to nearly 20 skills. Figure 1 on the following page represents a more widely agreed upon list of important skills involved in self-regulation. These EF skills, when working in tandem, create the necessary conditions for self-regulation, which can be defined as “…the capacity to plan, guide, and monitor…behavior from within and flexibly according to changing circumstances” (Diaz et al., 1990, p. 130).

Although EF skills have had a long and consistent focus in educational literature, they are now being tied more directly to literacy development. In fact, there is growing evidence that EF skills play an important role in coordinating various components of reading tasks and contribute directly to reading comprehension.
According to the Institute of Medicine and National Research Council (2000), self-regulation is the cornerstone of development because it is so key to academic and social success and is outwardly observed in a child’s increased independence over time with complex tasks. As with most of human development, we expect variation and know that EF skills may develop more slowly in some children. However, instruction that builds EF skills has shown positive effects on many aspects of learning (Cartwright, 2012, 2015; Cartwright et al., 2019, Cartwright, Bock et al., 2020; Cartwright, Lee et al., 2020; Dawson & Guare, 2018; Goldstein et al., 2014; Meltzer, 2010). EF skills assessed formally or informally in early childhood have been found to predict school readiness for reading and math and, in many cases, EF skills predict outcomes better than IQ scores (Zelazo et al., 2016). Furthermore, we also know that “the brain undergoes a particularly rapid transformation during early childhood which may represent a window of opportunity for the cultivation of EF skills via well-timed, targeted scaffolding and support” (Zelazo, 2015, p. 64). This period has the greatest potential for growth and development which is a strong argument for Reading Recovery and primary-grade professionals to be attentive to and understand EF development.

**EF Skills in Relation to Literacy Development**

Although EF skills have had a long and consistent focus in educational literature, they are now being tied more directly to literacy development. In fact, there is growing evidence that EF skills play an important role in coordinating various components of reading tasks (Barber et al., 2021; Cartwright, Bock et al., 2020; Cartwright, Lee et al., 2020; Locascio et al., 2010; Nguyen et al., 2020) and that EF skills contribute directly to reading comprehension (Cartwright, 2015; Georgiou & Das, 2018; Kieffer et al., 2013; Locascio et al., 2010; Taboada Barber et al., 2021).

Duke and Cartwright (2021) identify several specific domain-general EF skills that work across content areas that have also been shown to be actively employed during reading. These include the following:

- flexibility (Georgiou & Das, 2018; Kieffer et al., 2013)

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**Figure 1. Executive Function Skills for Self-Regulation**

<table>
<thead>
<tr>
<th>Goal-Directed Persistence</th>
<th>Capacity to persevere to achieve a goal regardless of obstacles, setbacks, or mistakes</th>
<th>Task Initiation</th>
<th>Capacity to overcome inertia to launch into a complex task in a timely manner</th>
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<tbody>
<tr>
<td>Planning</td>
<td>Capacity to develop plans to reach goals/complete tasks, including making decisions about important vs. irrelevant information or actions</td>
<td>Flexibility</td>
<td>Capacity to consider multiple bits of information simultaneously, switching between information, revising or adapting as needed</td>
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<td>Organization</td>
<td>Capacity to see or impose order on information or objects to better manage complexity</td>
<td>Response Inhibition</td>
<td>Capacity to restrain habituated responses and/or reactions until enough information is collected and evaluated</td>
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<tr>
<td>Working Memory</td>
<td>Capacity to hold information and past experiences in mind (and update as needed) to support completion of tasks</td>
<td>Sustained Attention</td>
<td>Capacity to remain focused on particular information or tasks despite distractions, boredom, and/or fatigue</td>
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<tr>
<td>Self-Monitoring</td>
<td>Capacity to notice thinking and mental processes, detect problems, and assess effectiveness of problem solving</td>
<td>Emotional Control</td>
<td>Capacity to manage emotions in view of situations or contexts in order to direct behavior</td>
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• sustained attention (Conners, 2009)
• response inhibition (Potocki et al., 2017)
• working memory (Nouwens et al., 2020)
• planning (Nouwens et al., 2020; Sesma et al., 2009)

They also mention a reading-specific EF skill—graphophonological-semantic cognitive flexibility (GSF)—which is “…the ability to simultaneously consider and actively switch between the letter-sound (graphophonological) and meaning (semantic) features of printed words” (Duke & Cartwright, 2021, p. S31). Executive skills, they argue, enable readers to coordinate processes across word recognition and language comprehension to forge connections between phonology, orthography, and meaning. The concept of GSF was also explained in Lea McGee and Mary D. Fried’s monumental research in this way:

Reading acquisition requires simultaneous and flexible attention to multiple linguistic features, including orthographic, syntactic, morphological, phonological, and semantic features, and the ability to switch attention from one feature to another in flexible ways. (McGee et al., 2015, p. 25)

The existence of GFS is supported by MRI evidence (Aboud et al., 2016) which shows that EF areas of the brain contribute to connectivity between semantic and phonological processes during reading. Duke et al. (2021) likewise discuss the importance of GFS as a “bridging skill” and report that research has found a relationship between readers’ comprehension and their ability to simultaneously attend to and flexibly switch between letters and sounds in words and the meanings of words. There are several studies beyond these that support the existence of GFS as a unique executive function for reading (Aboud et al., 2018; Cartwright, 2002; Cartwright et al., 2019; Cartwright, Lee et al., 2020; Gnaedinger et al., 2016; Knudsen et al., 2018; Yu et al., 2018).

EF Skills and Reading Recovery

Between Marie Clay’s training as a primary and special education teacher and the development of Reading Recovery, she received her doctorate in clinical child psychology which she acknowledged as a “…fundamental turning point in her understanding of how to study children’s learning” (Gaffney & Askew, 1999). Clay’s training in child psychology coincided with a period of high interest in executive functions, and her definition of reading seems to reference executive control mechanism:

Reading is a message-getting, problem-solving activity, which increases in power and flexibility the more it is practiced. It is complex because:

- within the directional constraints of written language
- verbal and perceptual behaviors
- are purposefully directed [emphasis added]
- in some integrated way
- to the problems of extracting sequences of information from texts
- to yield meaningful and specific communications (2015b, p. 1)

This early reference to purposeful directedness is closely aligned to definitions executive control mentioned earlier. Clay (2015a) expounded on this concept in another early work, Becoming Literate: The Construction of Inner Control, where she made central the concept of “… the behaviors, the inner control, the visual perception and the in-the-head processing learned in the reading acquisition period become part of an interactive system of strategies which work in some way that empowers the system” (p. 317).

Of interest to teachers who work with emergent bilingual students, recent findings demonstrate that certain EF skills, such as cognitive flexibility, are stronger in emergent bilingual students than in monolinguals. Because two languages are always active in bilinguals, EF skills are recruited by the language processing system which reorganizes and/or fortifies this system. This relative strength could demonstrate that “…bilingualism ‘trains’ executive function through its constant recruitment for language selection” (Taboada Barber et al., 2021, p. S59).
While those references require a bit of deduction to conclude Clay’s thoughts on executive functions, her writings about self-correction make clear what she thought about self-regulation and EF skills. In Change Over Time, Clay (2015b) explained: “The main argument of this chapter is that self-correction behaviors are evidence of one kind of executive control developed and mobilized by readers to keep them on track” (p. 186). She went on to qualify what she meant, using psychologist Paul Karoly’s definition, saying that self-regulation refers to all of the processes “… that enable the individual to guide … goal-directed activities over time and across changing circumstances” (p. 189). She later added in a strong statement, “I urge my readers at this point to consider a more detailed account of self-correction as one active part of the assembling of early working systems, linked tightly with developing executive control mechanisms” (p. 199).

To further explore how embedded various EF skills are in reading, one only has to examine Clay’s (2016) description of what happens when a child reads (Figure 2) in relation to EF skills.

Children initiate problem-solving (which is an EF skill) and gradually learn how to...
- direct his attention (involving response inhibition and sustained attention to focus)
- pick up information (requiring flexibility to consider different sources of information, as well as organizing and storing in working memory)
- monitor his reading (an EF skill itself that also shows flexibility to be thinking about more than one thing at a time)
- make decisions (by initiating and flexibly considering new evidence against what is held in working memory) and
- activate self-correction (entailing more task-initiation, monitoring, and flexibility)
- revise a prior decision (necessitating flexibility about the decision held in working memory while monitoring its acceptability and potentially initiating additional searches to pick up information, make decisions, and monitor) (Clay, 2016, p. 133)

Carrying out all these processes is evidence of a goal-directed, self-regulated system. This quote is not unique — in fact, you can take almost any quote where Clay describes the complex processing involved in reading and see the connections to specific EF skills in this way.

**Figure 2. Clay’s (2016) Description of What Happens When a Child Reads in Relation to EF Skills**

“Children **initiate** problem-solving and gradually learn how to...

- **direct his attention**, response inhibition, sustained attention
- **pick up information**, flexibility, organization, working memory
- **monitor his reading**, self-monitoring, flexibility
- **make decisions, and** initiating, flexibility, working memory,
- **activate self-correcting** initiating, self-monitoring, flexibility
- **to revise a prior decision.**” flexibility, initiating working memory (Clay, 2016, p. 133)
At the time Reading Recovery was being developed, science had not yet confirmed all of what we know today about EF skills, yet Clay’s literacy processing theory consistently acknowledged and accounted for the role of EF skills as critical to the self-regulation needed for becoming literate. This is largely explained by Clay’s multifaceted literacy processing theory which involves both knowing about what changes occur over time in literacy processing AND knowing about sound teaching practices involved in creating the conditions to accelerate such changes. As Clay (2015b) wrote, “Teachers need a theory at two levels: a theory of what occurs [in literacy development over time] … and a theory of how to interact with what occurs which could lead to improved teaching interactions” (p. 77).

The teaching procedures and prompts used in Reading Recovery are centered on developing self-regulated and self-extending learners and are grounded in constructivist learning theory. According to Clay (2016),

[T]he child’s progress can be described and recorded in some detail within a constructivist theory that allows for an adult to share the complex task. Gradually the teacher will become less helpful as the learner locates more of the information in print, and takes on more of the processing and problem-solving. The reader shifts from meaningful acts to cognitive awareness of how these things can work together, and how to use new learning from this task in another context. (p. 212)

This, of course, aligns with theory of Lev Vygotsky (1978) who asserted that all learning was socially constructed, regulated by language between a novice and a more experienced other, which eventually gives way to the inner dialogue that form the processes of self-regulation of intellectual activity. Unlike some explanations of constructivist theories which assume learning happens with minimal guidance, Reading Recovery aligns with Kintsch’s (2009) view that learners are actively engaged in knowledge building and are not simply receiving information or acquiring knowledge. Kintsch clarifies, adding:

[A]lthough minimal guidance and discovery learning have frequently been advocated by constructivists, minimal guidance does not necessarily follow from a constructivist view of learning. Instructional methods are most effective when they respect the view of learning as an active (and, indeed, often effortful) process, with the right amount of guidance determined by the characteristics of the learner and the to-be-learned material… (2009, p. 224)

Although Clay wrote that no thought was given to specific theories of Vygotsky when developing Reading Recovery, she acknowledged that it was possible to interpret features of Reading Recovery in Vygotskian terms — especially noting changes in mediation and use of signs between the adult and child over time, the special use of conscious realization, and the concept of the zone of proximal development (Clay & Cazden, 2007). Lose (2007) has also highlighted the use of other constructivist principles by relating Reading Recovery prompts and procedures to Wood’s theories of the dimensions of contingent tutoring which include instructional contingency (how to support), domain contingency (what to support next) and temporal contingency (when or if to intervene).

**Research on Instruction That Builds EF Skills**

One of the foremost researchers in EF skill development, neuroscientist Philip Zelazo (2015) posits that EF skills, like many complex skills, are learned through repeated use in authentic contexts, usually with adult support and scaffolding: “These reflective, verbally mediated EF skills (and the neural circuitry involved) … become more efficient and effective as they are exercised in the context of goal-directed problem solving” (p. 59).

In Zelazo’s model, EF skills are being learned in much the same way as literacy — in meaningful problem-solving contexts within reach of adult modeling, demonstration, scaffolding, prompting, feedback, and support that relinquishes control from the adult to the child over time. Zelazo gives particular attention to reflection as a necessary element of EF development, saying, “Like EF skills, reflection is a neurocognitive skill — a way of using attention that involves specific neural circuits…for the iterative reprocessing of information, so that information is fed back into the system where it can be combined with other relevant information, yielding a more elaborate construal” (p. 59). This quote parallels Clay’s (2015b) literacy processing theory which involves similar constructs: Reading is a set of neural working systems and young readers are continuously prompted to problem solve using multiple sources of information simultaneously in recursive
loops that strengthen in power the more they are utilized. Interestingly, there are many additional overlaps between Zelazo’s accounting of EF skill development and Clay’s accounting of literacy development (Figure 3). There is considerable research regarding developing self-regulation and the EF skills this entails. Masten and Barnes (2018) explain that self-regulation systems appear to require experience with stress and challenges to optimize development, and that the timing of introducing these challenges probably matters a great deal. These authors make the analogy that early exposure to numerous animal and plant microorganisms is often protective against some allergies for children who grow up on a farm. The well-calibrated timing and exposure to appropriate levels of difficulty maximizes growth in self-regulation. A report from the National Center for Education Research at the U.S. Department of Education (Zelazo et al., 2016) about the development of EF skills in educational settings confirmed this by showing that students who receive differentiated instruction (well-calibrated exposure to appropriate levels of difficulty) show greater rates of academic improvement. The report also confirmed that EF skills can be engaged and developed through well-structured settings with a balance of enough challenge to stimulate the brain, but not so much to be overwhelming. This reinforces Clay’s (2016) assertion that when teachers select and introduce texts they are aiming to “challenge the child’s processing system but not upset it” (p. 47). When teachers leave opportunities for error against a backdrop of successful reading, we create the conditions for building working systems which “…then seems to be shaped by successful reading experiences into an implicit executive control mechanism operating in silent reading” (Clay, 2015b, p. 189).

Figure 3. Comparison of Current EF Skill Understandings With Clay

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<td>“…the development of EF depends crucially on increases in the efficiency of reflection. As with all skills, reflection develops through repeated use, in the context of goal-directed problem solving, and usually in the context of…support and scaffolding.” (p. 61)</td>
<td>“The Reading Recovery teacher aims to develop the child’s abilities to search for and use all types of information as they read books. Children will begin to initiate linking and problem-solving using different kinds of information, depending upon what is easy for them at a particular time. But the teacher aims to strengthen the child’s ability to search flexibly for information from different sources to problem-solve the meanings of text. She is careful to counteract any imbalance in the child’s use of information.” (p. 137)</td>
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<td>“Once children detect a problem, they can pause, interrupting the momentum of their behavior, and reflect on the task. When they do so, they may recognize that they know two different ways of approaching the stimuli, and formulate a higher-order rule that allows them to switch between.” (p. 63)</td>
<td>“Children act as if aware of some conflict of their response with something in the text... The willingness to choose between alternatives foreshadows the developing processing systems which will monitor, correct and control advanced literacy behaviors. A willingness to choose between alternatives leads to a search for more information and this can potentially take processing to new levels of complexity.” (p. 120)</td>
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<td>“Developmental improvements in reflection permit more efficient and effective problem construals, and allow for increases in the complexity of the rules children can formulate and keep in mind prior to responding.” (p. 59)</td>
<td>“A self-extending system can be thought of as bringing about new forms of mediation, or altering an existing working system to become more effective, or compiling more effective assemblies of systems.” (p. 136)</td>
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Instruction That Accelerates Literacy Progress

According to the U.S. Standards and Guidelines for Reading Recovery, teachers use the six tasks of the Observation Survey (Clay, 2019) to administer to the lowest 20% of students in Grade 1 and, based upon outcomes from these assessments, the lowest-achieving children are selected for a series of individually designed lessons. (Reading Recovery Council of North America, 2017). Because these children are considerably behind the achievement levels of their peers, a rapid rate of accelerated progress is necessary to catch them up to at least the average of their classroom. This acceleration happens because teachers are trained and challenged to design a series of lessons, based upon the child’s strengths. The teacher creates conditions for the child to be able to initiate successful activity and makes highly skilled decisions, moment by moment, moving flexibly around the teaching procedures and prompts all with the express goal of developing the self-regulation necessary for independence over time (Clay, 2016).

But there is much more underpinning these moment-by-moment decisions which encompasses what Clay’s referenced about a theory of “how to interact.” To explore these underpinnings, we’ll focus on a recent white paper (Almarode et al., 2021) written in responses to the current learning gaps created by the pandemic. Researchers John Hattie, Doug Fisher, Nancy Frey, and John Almarode, in conjunction with the national school superintendents association, report on how districts, schools, and teachers should best use federal relief resources based upon the science of teaching:

Ensuring that we actually accelerate learning for all students requires that we … focus on specific aspects of interventions, approaches, and strategies that have the potential to accelerate student learning … The starting point for this increase cannot be based upon some arbitrary point that is the same for every student [but] … must start from where students are in their learning journey and where they are ready to go next. (Almarode et al., 2021, p. 3)

They also remind us that focusing on what works is not the same as focusing on what works best. Using Hattie’s extensive meta-analyses, this resource documents again several elements of constructivist pedagogy that have extraordinarily high effect sizes as demonstrated by scientific research. Their white paper presents a litany of high-outcome practices that they argue should be standard practices. From the list provided in the white paper, the following practices, with reported effect sizes, already are standard practices in Reading Recovery and most comprehensive literacy classrooms:

- using scaffolded learning (.58) which corresponds to Clay’s scale of help and change over time in use of prompts tailored to each child
- employing differentiation with appropriate challenge (.59) refers directly to Clay’s call to design each lesson part to work at the cutting edge of an individual’s learning
- utilizing spaced practice (.60) which entails creating multiple exposures in different settings over time much like Clay’s “echoes across the lesson”
- teaching metacognitive strategies (.69) such as self-monitoring and self-correcting
- using feedback (.70) to reinforce, reflect upon, or support the child’s attempts
- engaging in deliberate practice (.79) which is defined as extensive engagement in relevant, challenging, effortful repetition with the specific goal of improving performance which is precisely what every lesson is designed to do
- teaching transfer strategies (.86) such as making children aware of and prompting for the useful reciprocity between reading and writing
- using formative assessment (.90) employed daily in running records and teacher observations which are used to adjust teaching
- connecting to prior knowledge (.93), in other words moving from what is known to extend new learning

Not surprisingly, this white paper also names Reading Recovery outright as an investment worth making because of high effect sizes (Almarode et al., 2021, p. 14).
Moving Forward
In the current climate of organized attacks on what can and cannot be taught and about how to best teach, there is much at stake. With the recent incursion of “science of reading” legislation based, at least in part, on Gough and Tunmer’s (1986) simple view of reading (SVR), Duke and Cartwright (2021) make it clear that the role of EF skills is not currently accounted for in either. “In contrast, there is no place in the original SVR for EF skills, nor does the SVR suggest EF interventions as an option for instruction or intervention for reading difficulty. Models consistent with the science of reading must include a role for EF skills” (p. S31). Sadly, this group’s influence may be premature, as author and science of reading advocate Mark Seidenberg recently lamented, “we know more about the science of reading than about the science of teaching based on the science of reading” (Seidenberg et al., p. S121). In contrast, some interventions, such as Reading Recovery, do account for and work actively to build EF skills necessary for reading and learning largely through pedagogical maneuvers consistent with the science of teaching.

Frequent Reading Recovery critic, Timothy Shanahan, recently admitted that Clay’s intervention model may be likened to the nimble hummingbird which science was convinced could not fly until it was studied, and much was learned about aerodynamics. He wrote: “This instructional scheme has often been challenged by critics (e.g., Baker et al., 2002; Greaney, 2001, 2011; Wood, 1994) unhappy because of the inconsistency of that program with what is known about effective decoding instruction. Despite this inconsistency, qualitative syntheses (e.g., Shanahan & Barr, 1995), meta-analyses (e.g., D’Agostino & Harmey, 2016), and specific high quality studies (What Works Clearinghouse, 2008) have all concluded that Reading Recovery improves reading…Somehow, students who are being taught in this way are still ending up reading much as the kids who receive explicit decoding instruction…” (2020, pp. 242–243).

What Shanahan does not yet grasp is that Clay’s theory is as much about what to teach as it is about how to teach. Literacy processing theory is predicated on highly researched pedagogical principles of scaffolding, differentiation, deliberate practice, use of formative assessment and feedback, and gradually releasing control over to the independent learner. As Clay (2015b) wrote, “the idea of giving ‘lessons in becoming constructive’ challenges early intervention professionals to think about the perceptual/cognitive learning required in each lesson activity. It calls for more attention to what makes an early intervention preventative of subsequent difficulties, in contrast to one which only adds more items to knowledge sources” (p. 5).

It has been often reported by classroom teachers and parents that Reading Recovery didn’t just improve a child’s reading and writing, but that particular children seemed to have ‘learned how to learn’ during their short intervention. Reading Recovery teachers routinely receive notes from parents or are told by classroom teachers about long-lasting successes with children’s attention, motivation, and self-confidence in literacy and in other curricular areas. Recently, I received such a note about a former Reading Recovery student who was recommended for honors English (and other honors classes, too) as he prepares to transition to high school next year. His mother wrote: “He wants you to know that you are a huge part of his success. You made him feel like he could do anything. He still remembers visiting you every morning through 4th grade. I want to thank you from the bottom of my heart — you made my kid believe. Believe he could do anything, believe that he could be successful and believe that teachers believe in him. We will forever be grateful…” (Personal communication, 2022).

Reading Recovery is not an intervention designed only to add items into a child’s information storehouse but is instead an intervention concerned with getting children to actively construct perceptual and cognitive learning processes and networks necessary to create self-extending learning. Teachers using Clay’s two-part theory about literacy development and about how to best interact and teach as a basis to differentiate instruction are likely instrumental in building and developing EF skills for reading and for learning in general. As Shanahan remarked, like the fabled hummingbird whose wings and body work differently than other birds, perhaps Reading Recovery’s use of instructional practices supported by copious amounts of pedagogical research, is what enables us to get children to fly.
Further Discussion

Using the list of EF skills from Figure 1 in the article, discuss and label where you see these EF skills in the following Clay quotes:

Change Over Time
Clay, 2015b
p. 121

[A hypothesis can be generated by any knowledge source (and possibly from more than one source simultaneously). The processing system makes a decision and checks out its implications. If the attempt seems to be a misfit with the information available it will take a bit longer but the system will eventually settle for [a] hypothesis that it can accept. Deciding between hypotheses will depend upon what is stored in the various knowledge sources, and how well they are linked up for this crucial decision. (Singer would call this ‘assembling working systems.’)]

Change Over Time
Clay, 2015b
pp. 127–128

Behavioral records usually only capture combined behaviors and do not reveal the separate input-mediation-output systems which produce those behaviors. I have used the term ‘strategic activity’ to refer to what goes on in any of the aspects of processing which Singer proposes, when the brain
- picks up information,
- works on it,
- makes a decision,
- evaluates the response,
as well as to the overarching execution of that sequence.

Literacy Lessons
Clay, 2016
p. 7

Young constructive readers and writers work at problem-solving sentences and messages, choose between alternatives, read and write sentences, work on word after word, with the flexibility to change responses rapidly at any point. As they attend to several different kinds of knowledge, they are searching, selecting, rejecting, self-monitoring, and self-correcting.

References


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**About the Author**

Jeff Williams, Reading Recovery teacher leader in residence at The Ohio State University, is a regular speaker at international, national, and regional conferences and provides staff development in school districts across the country. In 2018, Jeff was elected president of RRCNA and has served on the board of directors since 2013. He has coauthored a book for NCTE, written articles in numerous professional journals, and has authored 120 little books for Hameray Publishing Group.

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