



LITERACY ACCELERATOR #1 | FOUNDATIONAL SKILLS



Foundational Reading Skills Are, Well, The Foundation

OVERVIEW

Foundational skills are the cluster of tightly interrelated but discrete subskills¹ that together enable readers to process the alphabetic code into meaningful text. It differs from the other literacy accelerators in being a cluster of separable skills, each with several dozen patterns to master. In that way, it is analogous to arithmetic—to the math ‘facts.’ Each aspect of foundational skills names a slice of the skills and knowledge (print concepts, phonological awareness, phonics, word recognition, and fluency) that together constitute what the brain needs to learn and do to read proficiently.

The most frequent performance breakdowns for students struggling with reading generally stem from inadequate practice with foundational reading or scarce opportunities to gain fluency with grade-level texts, both relatively straightforward to reinforce.

Because foundational skills mastery is so crucial and the number of discrete skills to grasp is substantial, the pathway to success lies primarily through a well-structured curricular and instructional program that teaches these skills systematically and in a coherent sequence. As part of this program, there must be early screening and progress monitoring. Specifically:

- Appropriate early screening on key skills (beginning with letter names and sounds, followed by phonological awareness; phonics and decoding thereafter) to identify children at risk for reading difficulties, and
- Regular, diagnostic assessment to determine which skills are solidly in place and which need additional instruction or reinforcement.

The importance of differentiating instruction and practice opportunities based on appropriate early screening, frequent progress monitoring, with diagnosis as needed, cannot be overstated. They are key to each student’s success. They are also key to providing students with opportunities to use what they demonstrate they already know as springboards to deepening their skills and to accelerating their growth as readers.

Findings in multiple studies reinforce the centrality of solid foundational reading skills to students’ reading comprehension and broader literacy abilities. The seminal National Reading Panel’s (NRP’s) review two decades ago is chief among the works testifying to the strength of the evidence for solid early reading practices. The NRP unambiguously concluded that there are several key pillars of early reading instruction: letter names and

¹ This cluster of skills consists of letter names and sounds, phonological awareness, phonics/decoding (mastering these first three promotes rapid, automatic word recognition), and reading fluency.

sounds, phonological awareness, phonics/decoding and fluency. Students in the early grades should receive sufficient explicit, systematic instruction in these areas, along with the other accelerators, so that they become proficient readers by grade 3.

Too many teachers are *still* sent into classrooms without having been taught about this vital aspect of reading and how distinct it is from the other aspects of literacy that form the accelerators and, together, make up the science of reading. Given its neglect, it's no wonder that systematic and explicit instruction has fallen out of practice in so many schools. Recently, many around the nation—parent groups and reporter Emily Hanford being among the most outspoken—have sounded the alarm about the anemic teaching of foundational skills in our schools. Several recent influential studies in phonemic awareness, phonics, word recognition, and fluency described below show once again why foundational skills need to be systematically taught, frequently assessed, and robustly practiced, skill after skill, in a research-grounded sequence.

To become successful readers (and writers) of English, all students, regardless of ethnicity, language origin, or sociodemographic characteristics, must learn the same foundational knowledge and skills as mainstream English speakers do. These students also require that teachers and schools take into account their particular strengths, needs, and life experiences that influence their educational experiences and, ultimately, their success.

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THE ENDURING BODY OF EVIDENCE

A 2014 paper by Linnea Ehri cemented the importance of orthographic mapping to students developing accuracy and automaticity in word recognition. Just what is automatic word recognition? Automatic word recognition means students recognize words rapidly without having to sound them out (decode them). It develops for any given word after enough successful encounters, provided the word is decoded correctly. The number of encounters varies from student to student. It is somewhat counterintuitive, but successful decoding ultimately leads to rapid, effortless word recognition without decoding. Successful decoding occurs when students commit decoded words and their sub-parts to long-term memory. When a student successfully decodes *weigh*, she has also learned that “eigh” makes the long /a/ sound and can then more easily decode *sleigh*, *weight*, and *freight*. The transferability available through such learning is a key to reading success.

Cognitive scientists call *any* word that is recognized automatically as a “sight word.”² The number of words students can recognize automatically is called their “sight word vocabulary.” Students with larger sight word vocabularies are better equipped to decode newly encountered words, both regular and irregular. They also are more likely to transfer the meaning of newly decoded words to long-term memory and far more likely to read fluently. That’s because they have the cognitive capacity freed up due to that bank of cemented word patterns. This series of interactions is what is known as orthographic mapping. Again, how many times it takes for a word to become a sight word depends on the student. Natural variances exist: Some students need to see and decode words more times, some fewer, and some *far* more. There are obvious implications here for instruction based on diagnostic assessment, built-in practice, and personalization opportunities.

² For decades, educators have been defining “sight words” differently than cognitive scientists have been. Educators have used it to mean irregularly spelled words that students memorize. Cognitive scientists define sight words as terms automatically retrieved—within a quarter of a second!—once students have decoded them successfully some number of times (again, how many depends on the student). In other words, students recognize words on sight, effortlessly, and automatically without decoding. NO memorization is involved.

David Kilpatrick's (2016) work grew out of Ehri's to examine why many students fail to gain the advantages of orthographic mapping and don't recognize enough words effortlessly and automatically *despite accurate decoding*. Kilpatrick drew on previous research (Rosner, 1971) to develop an expanded notion of phonemic awareness:

1. *Basic phonemic awareness*, common in the literature and instructional materials, is mostly limited to blending and segmenting phonemes within words. It is now part of every systematic phonics program.
2. *Advanced phonemic awareness* (sometimes called phoneme manipulation) expands on basic phonemic awareness to include the ability to delete and substitute phonemes. Essentially, advanced phonemic awareness is a nimbler manipulation of sounds. For example, substituting medial vowels (*hid* to *had*), ending sounds (*roof* to *room*), and deleting or substituting internal phonemes in the beginning and ending blends (*flute* to *fruit* or *paste* to *paint*). Remember, phonemic awareness involves only the sounds, not the letters that represent the sounds. This idea of deep manipulation of sounds inside words having value is new, even for knowledgeable early elementary teachers.

A few years later, Paige et al. (2019) conducted the first study to employ PATH analysis to test a hypothesized model identifying connections among letter-sound relationships, pseudo-word reading, sight-word reading, and fluent reading to scores on an end-of-year state reading test. It demonstrated the direct connection between proficiency in foundational skills (automatic and accurate word recognition and fluent reading) and achievement on state reading comprehension exams.

Paige provided teachers in his study with a two-year-long course on systematic phonics. He did so in a large city in a southeastern state, working with teachers of low-income students who also were mostly of color. The same year, John Sabatini et al. (2019) extended those findings at a national level with a vast study, showing that fluent reading was the strongest predictor of comprehension on the NAEP. His research helped confirm the scope of the sight word recognition deficit in our student population, along with the devastating and persistent effects of failure to support student attainment in this area. Students who read too slowly were not fluent, which impaired comprehension. Bottom performers read at an average rate of 68 words per minute (WPM) compared to the national average for fourth grade (Hasbrouck & Tindal, 2017) of 112 words per minute. Ninety percent of the students who read at a slower rate scored *below proficient*—a full 73 percent of them scored *below basic*. Nearly a quarter of all students nationally lack the word reading proficiency to comprehend fourth-grade level texts. Paige and Sabatini's work show the importance of students having proficient foundational skills and, in particular, automatic and accurate word recognition and fluent reading. Again, Black students, English learners (ELs), students from other historically marginalized groups and students from households experiencing economic hardship have for too long been the students afflicted with these low performance scores. Our teaching approaches must be adjusted to turn these outcomes around. The stakes are too high.

HOW DO FOUNDATIONAL READING SKILLS—INCLUDING FLUENCY PRACTICE—DRIVE COMPREHENSION?

Fluent reading is dependent on efficient, integrated, foundational reading processes, including phonemic awareness and knowledge of letter-sound correspondences. Through instruction and practice, students gain automatic word recognition. When these processes are in place, students have a much greater likelihood of possessing the decoding skills necessary to bootstrap their reading of words to facilitate fluent reading (Share, 1995). While word automaticity is essential to fluent reading, students must also learn to read words in connected text and become familiar with the syntax that becomes increasingly sophisticated across the grades as text complexity increases. All of these capacities must be developed, so students' attention moves

beyond the words on the page to consider the ideas and information being transmitted—to becoming capable and independent comprehenders of what they read.

Once fully mastered, this suite of reading skills forms the foundation from which readers can comprehend the words and sentences they read, and students can thereafter make sense of reading for themselves. Paige et al.'s work (2019) showed that students proficient in foundational skills were almost seven times more likely to be proficient on the state reading comprehension assessment than students who were less adept at foundational skills. That intervention provided foundational reading knowledge to the teachers of students who were then evaluated on their foundational skills by the researchers. Those students with a solid base in foundational skills performed better on the third grade test than students who lacked foundational skills. Similar to the work by Sabatini et al. (2019), the researchers noted, "Our results advance the idea that achievement in foundational skills leads to increased orthographic knowledge and reading fluency that is then likely to result in proficiency on the state-administered reading assessment" (Paige, et al., 2019). This would seem to demonstrate that providing students with solid foundational skills can disrupt the beginning of the Matthew Effect's vicious cycle, where the difference between proficiency in readers increases over time (Stanovich, 1986).

Whether done aloud or silently, fluent reading is another crucial component of students' reading comprehension. LaBerge and Samuels conducted a study decades ago (1974) to unbundle the interaction between word automaticity and fluency. One group of students practiced automaticity at the word level while the other group engaged in fluency practice with connected text. Students in the connected text group showed significant improvement beyond those who worked solely on word automaticity. Since we saw above that automatic word recognition is also crucial, these findings may point toward a "two for one" effect of practicing fluency with connected text, impacting rapid word recognition as well as fluent reading. Two seminal studies, one by Chomsky in 1978 and a second by Samuels and LaBerge in 1983, examined the efficacy of repeated readings to improve fluency. After accurate modeling of the target passage, students read a short text of 100 to 200 words four or more times over several days. Students read in the company of a teacher or a more knowledgeable reader to assist them with difficult word pronunciations. The two studies established that practice using repeated readings decreased word mispronunciations and improved reading rate, resulting in improved reading fluency. Comprehension improved as students focused less on word decoding and more on creating meaning from the text.

Bottom line, research shows that fluent reading accounts for about one-quarter to one-half or more of the differences in students' reading comprehension levels. When a reader is fluent, they can focus their mental attention on understanding rather than pronouncing the words on the page.

These findings mirrored the benefits of fluency to free cognitive capacity Ehri (2014) would find decades later. These studies also show that reading fluency improves through repeated and coached reading practice when sufficient underlying reading skills are in place.

Following that research, Lee and Yoon (2017) conducted a meta-analysis of 34 studies where teachers employed repeated reading as an instructional strategy for students with reading disabilities. The authors found this strategy resulted in significant fluency improvement with a moderate effect size.

Bottom line, research shows that fluent reading accounts for about one-quarter to one-half or more of the differences in students' reading comprehension levels. When a reader is fluent, they can focus their mental attention on understanding rather than pronouncing the words on the page. Reading theorists have suggested

that fluency occurs when the numerous reading processes are synchronized. For decades, empirical studies had shown a moderate correlation between reading fluency and comprehension; however, several recent studies go much further (Dohower, 1987; Fuchs, et al., 2001; Kim et al., 2011; Swanson & O'Connor, 2009). They suggest a causal connection. These studies also showed that prosody (expression) predicted reading comprehension either in place of or in addition to rate.

HOW CAN WE SOLIDIFY STUDENTS' FOUNDATIONAL READING SKILLS? HOW CAN PERSONALIZATION BE USED TO ASSIST?

The implications of all of these studies for teaching and learning are clear: For the vast majority of students, foundational reading skills need to be systematically taught, carefully assessed, and robustly practiced (in response to assessment results) skill after skill in a research-grounded sequence through a research-based program. There are several excellent foundational reading skills options on the market.³ They contain all of the elements outlined above, though not all have yet incorporated advanced phonemic awareness, along with regular assessments of student progress. Homegrown or piecemeal attempts to create comprehensive foundational skills are inadvisable and potentially disastrous for vulnerable populations of students—especially for students who arrive at the schoolhouse door more isolated than their peers from texts. Likewise, assessments, whether computer-based or teacher administered, should in all cases be integrated seamlessly into the foundational skills program. By far the simplest way to achieve this is through a solid program that contains all these ingredients in one package.

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Weekly assessments of what is being taught and previous skills (in grades K–3) are critical to providing clear concrete information to address what to do with students who perform poorly with one skill or another and need more practice. In grades 2–3, periodic and universal measurement of fluency with grade-level text is necessary to monitor and provide additional support for students who need them. Fluency checks should be administered at the beginning of the year with grade-level text and readministered as needed throughout the year. Fluency checks should also be administered to older students exhibiting reading problems. Dysfluency is as likely a source of reading problems regardless of grade level. Because text increase in complexity across grades and genre, being fluent in one grade does not guarantee fluency in succeeding grades. If dysfluency is revealed, then students should get the practice and support they need to become fluent. Such checks should attend to students' appropriate accuracy rate using nationally verified norms. Teachers can administer additional regular fluency checks in lots of low-stress ways (e.g., listening in on choral or buddy reading). Here's an essential note to keep in mind as we teach students to read: Fluency ability does not have anything to do with intelligence. In fact, the ability to read fluently resides in a completely different part of the brain; it is like a muscle that can grow stronger when exercised.

Assessments—a central part of any systematic, explicit foundational skills program—allow teachers to identify students who need specific, targeted, and personalized supports. So foundational skills, once introduced and practiced whole class, can be differentiated and personalized based on the results of those frequent assessments. Students will display strengths in different strands of foundational skills. Some students will attain

³ Open (free) resources include [Bookworms](#), [CKLA Skills Strand](#), [EL Education Foundational Skills](#), [TN Best for All](#)

mastery with very little practice and should have opportunities to work on other aspects of reading. Many other students will need more practice opportunities in different forms to pick up a given skill at first. A few students will need lots of opportunities to practice skills before they reach mastery. Each and every student should get the exposures needed to gain mastery and confidence in early, foundational reading.

To implement foundational skills programs equitably, we also must ensure that in addition to holding high expectations for all students that all students have access to a full range of supports, culturally relevant content and practices, and aligned instructional materials. That is not the case now.

Reading science has shown us *what* needs to be amplified in early reading, but for this practice to be equitable for students, we must also address the *how*. For example, it is important and valuable for teachers to make connections between book English and students' home language(s) or dialects. Doing so allows teachers to leverage—and honor—each child's existing knowledge and skills and seize the opportunity to explicitly teach the connections and differences between the home language(s) and English. To implement foundational skills programs equitably, we also must ensure that in addition to holding high expectations for all students that all students have access to a full range of supports, culturally relevant content and practices, and aligned instructional materials. That is not the case now.



Recommendations

Below are ways for teachers—based on that frequent assessment data—to personalize students' learning through a prism that values students' backgrounds, languages, cultures, points of view, knowledge, and skills:⁴

1. FOCUS ON SUPPLYING THE FOUNDATIONAL SKILLS (PHONEMIC AWARENESS AND PHONICS) NECESSARY FOR READERS TO GROW THEIR SIGHT WORD VOCABULARY:

Share (1995) had noted that a strong base in phonics allowed students to engage in self-teaching of new words and thereby improve their reading comprehension. He showed that self-teaching is the *primary* vehicle through which students can grow their sight word vocabularies. Self-teaching here refers to the idea that students who know enough phonics to decode successfully will teach themselves to recognize new words as they read and increase their sight word vocabulary. They also reinforce the phonics patterns they know through this practice. For example: If a student knows all of her consonant sounds, consonant blends, and short /i/, the word *list* will become a sight word after some number of repetitions. Similarly, if she knows the long A rule, all her consonant sounds, and the short /i/, the word *mistake* will become a sight word after some number of repetitions despite being a longer word and two syllables. Share noted several significant findings that allowed students to self-teach.

OPPORTUNITIES FOR PERSONALIZATION?

Yes! Personalization is crucial in foundational skills instruction. Many opportunities exist that can

⁴ The products and approaches named here are called out because they are known to the authors and align to the research supporting this accelerator. They are examples that could work, not an exhaustive list. Careful evaluation against the Consideration Question and vetting should be undertaken before making any decisions about the utility of any of these for your needs.

tailored to assist students with what they need. Ehri (2014) explicitly called out several preconditions (outlined below) necessary for readers to retain words in memory and increase their sight word vocabulary. They can be taught and practiced as much as each student (of any age) needs through a variety of human- and tech-enabled personalized options. What is crucial is that each individual student gets the opportunities to practice to reach the mastery she needs. Here are some specific areas:

- **Build phonemic awareness:** Phonemes are the smallest sounds in words. Phonemic awareness is the ability to focus on and manipulate phonemes in speech. Students who have phonemic awareness have two types of understandings about decoding words: segmenting and blending.
- **Focus on advanced phonemic awareness:** Kilpatrick's work (2016) shows that our weakest readers, at any grade level will need work with advanced phonemic awareness—in addition to phonics instruction and reading as great a volume of texts as possible. Proficiency in advanced phonemic awareness requires accuracy and speed. Students must perform the manipulation (deleting, substituting) within two seconds to ensure automaticity with that process. Students' ability to manipulate sounds correctly and with speed correlates with more excellent word reading proficiency. Just as with cementing new decoding patterns, the ability to hear and manipulate sounds within words becomes automatic, though the number of exposures different students need will vary widely.

A free comprehensive phonemic and advanced phonemic awareness program, complete with assessments for grades pre-K-2, was developed from current research findings. Commissioned by the Tennessee Department of Education, "Sounds First" is available through these portals: [TN DOE](#), [Achieve the Core](#), [Reading Done Right](#). Guidance is built in on responding to assessment results to provide differentiated practice for all students, as well as moving students who have demonstrated mastery through the sequence more quickly.

- **Teach students how to use context when unsure of the word's pronunciation.** When students come to an unknown word, their first attempts at recognition must be through decoding. If in doubt, predicting by context is a valid strategy (Ehri, 2014) *provided the reader then returns to the word to decode it*. Words can become sight words when read in context (within connected text) and out of context (in puzzles, games, lists, worksheets). But not if their phonic patterns are not noted and internalized. New encounters with words are learning opportunities for students to add new words to their sight word vocabulary provided they are given adequate and research-based processing experiences with phonics patterns. We know that students can recognize words through multiple means. However, when students skip words or use context to identify a word without returning to decode, they may comprehend the passage. Still, they will not bond that skipped or context-derived word or the phonics patterns within the word to long-term memory. For students to use that unknown word as a teaching opportunity, *students must return to the word to read (again aloud if possible)*, spell, and note the letters or combination of letters forming the phonemes (sounds) that make up the word.
- **Build syntactic awareness:** Share (1995) cited many studies that show that syntactic awareness measured by sentence correction supported students' decoding. The idea here is that instruction with syntax asks students to rephrase sentences while maintaining meaning, deconstructing longer sentences, combining two shorter sentences into longer sentences, turning questions into statements, and turning statements into questions. All of these

activities support decoding ability. These same activities support comprehension.

- **Grow students' ability to use phonics' knowledge to read words and spell them:** Knowledge of major spelling/sound correspondences of the writing system aids students—even with irregular words. Share (1995) noted that very few irregular words are entirely irregular; they have decodable sections! Thus, providing students with opportunities to learn the regular phonics patterns strengthened students' decoding and ability to produce words spelled accurately across the board. For example, the word *often* is undoubtedly irregular, but the f and n make the same sounds they usually do.
- **Foster understanding of the articulatory gestures:** When students learn how the mouth moves to form phonemes, they are more likely to retain these and correctly reproduce them when reading new words (Ehri 2014). In essence, instruction in these articulatory gestures helps students develop a more substantial base in phonemic awareness and, ultimately, decoding and word recognition. There is obvious value for English learners, in particular, to make this habitual practice in all early-grade classrooms and in any setting where newcomers are working to understand the alphabetic code in English.
- **Practice spelling:** Ehri (2014) wrote, “When readers see a new word and say or hear its pronunciation, its spelling becomes mapped onto its pronunciation and meaning. These mapping connections serve to ‘glue’ spellings to their pronunciation in memory.” Processing the meanings of words bonds semantic connections to the word units as well.

2. FOCUS ON SUPPLYING THE FOUNDATIONAL SKILLS (PHONEMIC AWARENESS AND PHONICS) NECESSARY FOR READERS TO GROW THEIR SIGHT WORD VOCABULARY:

As noted above, Share (1995) looked at how students employed foundational skills to grow their sight word vocabularies. How many repetitions are needed depends on natural variations in students. For anyone, though, less familiar words will take more repetitions to become a sight word, another tribute to the value of infusing students with many opportunities to build their vocabularies (Accelerator #3). Some students will need more time on the page. Some studies (Landi et al., 2006) have shown that sight word acquisition is more robust out of context. If a student is learning the word mistake out of context, she only sees the word and must focus solely on its phonics patterns to decode it, whereas, in context, she might not focus on these patterns as intently or possibly not at all. This is why the now-debunked popular three-cueing system did such damage. By not prioritizing decoding first, students too often did not focus on the phonics at all. But, of course, in-context reading is what all this learning is aiming for! In other words, “both-and” practice options would be helpful, and any solid, systematic, structured foundational skills program provides them.

OPPORTUNITIES FOR PERSONALIZATION?

Yes! Fertile ground for research-based personalization exists here, and many are available.

As noted, students will vary in how many repetitions they need to learn phonics patterns. Personalization can address this essential skill. Some students will also respond more to relatively straightforward activities and exercises such as worksheets; others to games, puzzles, and wordplay; and yet others to competitive versions of the same. We strongly recommend using the additional practice options available through a structured, systematic foundational skills program. If ancillary materials are still desired, use

⁵ Reminder: We are using “sight words” as cognitive scientists refer to it. Cognitive scientists define sight words as automatically retrieved—within a quarter of a second!—once students have decoded them successfully some number of times (again, how many depends on the student). In other words, students recognize words on sight, effortlessly, and automatically without decoding. NO memorization is involved.

a credible publisher such as Open Up Resources for its research-proven [OneTab resource](#), or [Educators Publishing Service](#) for paper-and-pencil or digital practice materials.

The excellent news is that no statute of limitations exists on growing students' sight word vocabulary. No matter how old, all students will expand their sight word vocabulary whenever they decode words correctly, see a word, and hear it read correctly. These are vital implications for older students who are learning to speak and read English for the first time.

3. GROW STUDENTS' SIGHT-WORD⁵ VOCABULARY:

As noted in 2000, the National Reading Panel identified 98 studies that used repeated reading to improve oral reading fluency.⁶

OPPORTUNITIES FOR PERSONALIZATION?

Absolutely! Fluency practice can take many low-tech, more interactive forms: choral reading, budding reading, and reading aloud grade-level texts while students follow along. All of these practice opportunities need to be differentiated and personalized, so students who will benefit are the students who are getting these opportunities.

See [Achieve the Core's fluency packets](#) for customizable grades 2-12 fluency support. Make sure that students have opportunities to see themselves and their experiences positively affirmed in the texts they will be reading and practicing with. Make sure that the fluency practice includes texts that represent diverse perspectives, histories, and identities.

Focused tech-enabled programs like [Read Naturally](#) are easy to use and provide streamlined feedback to both student and teacher. Sophisticated newcomers like [Amira](#) or [Mindstar Books](#) show promising levels of customized feedback through the use of AI.

Teachers can use phones to record readings of texts, then send them to students to listen to. Students then practice with the same texts and send back to partners in working in pairs or groups. Though teachers can limit this practice to students who need fluency supports, all students often want to do it.

Public speaking can and should be highly personalized and is one of the few areas where student choice and content linkages can cross over to foundational skills mastery. Students all deserve to be confident, fluid public speakers. The practice to become skilled is a terrific accelerator of reading fluency.



⁶ Note that, particularly for older students, it is vital for student agency that anyone who does not yet have fluency with grade-level text be provided clear information about how to improve and why a given intervention or practice works. Second, adults must stay present, acting as coach and encourager of student efforts. Without such support and encouragement, even the most glamorous intervention will fall far short.

WHAT HAPPENS NEXT?

Once you have identified that you want to pursue a personalized approach and you have determined that it *is* tangibly tied to one or more of the literacy accelerators, ask yourself whether it:

- 1. Advances the right content for your students?**
- 2. Promotes equity and counteracts bias in both the assignment and delivery of the chosen instruction?**
- 3. Offers opportunities to elevate student interest or agency in their own learning?**
- 4. Is easy to use and implement?**

(See the Consideration Questions (Appendix A) for more detailed reflections.)

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