

RESEARCH

# Core5 Logic Model

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## Core5 Program Logic Model

Approximately 2 out of 3 fourth grade students do not achieve standards of reading proficiency as defined by the National Assessment of Educational Progress (NAEP, 2022). Students who struggle with reading in early grades are at heightened risk of experiencing subsequent academic and social difficulties (Connor, Alberto, Compton, & O'Connor, 2014). Thus, supporting the development of fundamental reading and literacy skills in the early grades is imperative.

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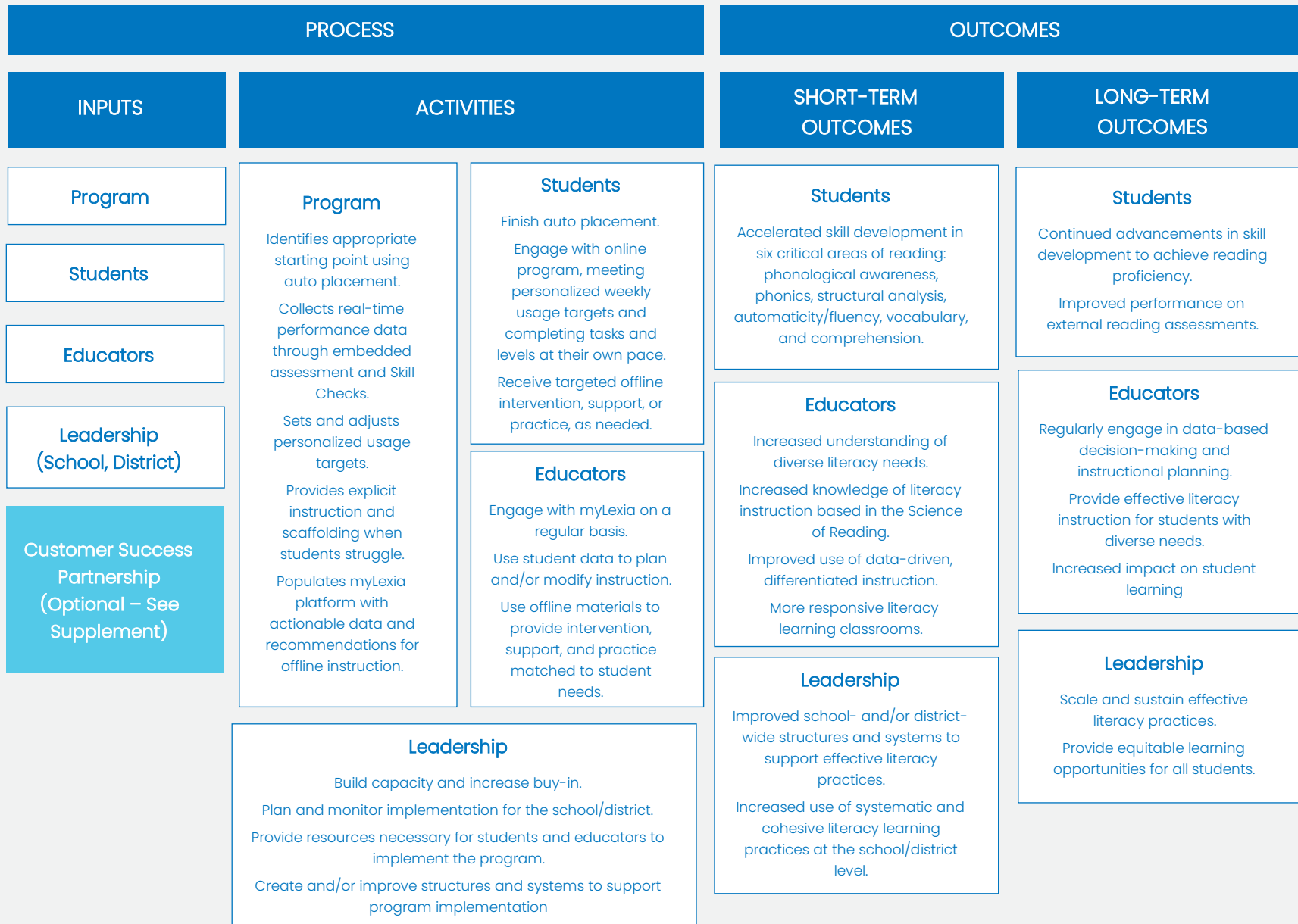
Lexia Core5 Reading (Core5) is an adaptive blended learning program designed to accelerate the development of fundamental literacy skills for students of all abilities in grades PreK-5.

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Based on the Science of Reading and embodying research-based best practices, Core5 follows a rigorous scope and sequence that supports both foundational and advanced literacy skills. Students receive explicit, systematic instruction as they follow personalized learning paths targeting six key areas of reading: phonological awareness, phonics, structural analysis, automaticity/fluency, vocabulary, and comprehension. As students work through the online portions of Core5, real-time performance data is collected using patented embedded assessment technology. This data populates the myLexia platform, educators' primary point of interaction with the program. The myLexia platform provides ongoing, norm-referenced, actionable data to inform teachers' instructional planning.

As a blended learning program, Core5 integrates online activities with offline instruction. The online portion allows students to work independently at their own pace, with program features designed to promote student engagement and motivation. Coupled with these online activities are teacher-directed offline materials that target the needs of individual students and promote reading proficiency. The Core5 Program Logic Model is a visual illustration of the process by which Core5's intended outcomes are achieved.

# Core5 Program Logic Model



The Core5 Program Logic Model defines the inputs and activities involved in implementing Core5 and the outcomes expected. Outcomes are divided into two categories: short-term and long-term. Short-term outcomes are the more proximal, or immediate, results of Core5. Long-term outcomes are more distal and reflect the overall program goals. Together, all components of the Core5 Program Logic Model summarize the comprehensive process by which these long-term outcomes are achieved. The Logic Model helps satisfy the “demonstrates a rationale” level of evidence for the effectiveness of an educational program as described by the Every Student Succeeds Act (ESSA).

When students, educators, and leadership engage with the program as specified in the Program Logic Model, Core5 is considered to be implemented with fidelity. Program metrics that reflect implementation fidelity include student usage (e.g., meeting personalized weekly usage targets), educator and leadership engagement with the myLexia platform, effective use of data to inform instruction, and delivery of offline program components (Lexia Lessons and Skill Builders).

Each major component of the Core5 Program Logic Model is defined in more detail in the sections below. These definitions are intended to operationalize the components. The Logic Model, and the accompanying operational definitions, are meant to provide guidance for research studies and/or program evaluations conducted by researchers internal or external to Lexia.

While Core5 is designed to be engaging and accessible, Lexia recognizes that implementing new programs in school settings is often challenging (e.g., Lyon, 2017). To support customers in addressing these challenges and achieving implementation success, Lexia offers a variety of optional Customer Success Partnerships. A Customer Success Partnerships Logic Model is presented here as a supplement to the Core5 Program Logic Model. This supplement describes the inputs, activities, and expected outcomes associated with these optional Success Partnerships. While varying levels of Success Partnerships are available, the core components of these partnerships (defined below) are consistent across packages. Packages differ in the frequency or intensity with which these components are provided.

## Core5 Inputs

Core5 inputs describe the key components necessary to implement the program. Inputs can be broadly divided into two categories: the program itself, and the people involved in its use. In the case of Core5, people include students, educators, and school/district leadership.

**Program.** As described above, Core5 is an adaptive blended learning program that aims to accelerate the development of literacy skills. Blending online and offline components, Core5 provides a systematic and structured approach to reading instruction.

**Students.** Core5 is designed for students in grades PreK–5. Each student brings a unique set of background characteristics, including but not limited to reading ability, educational history, social/cultural context, and personal attributes. Inherent in the Core5 Program Logic Model is the assumption that student background characteristics will contribute to and differentially impact program outcomes. As such, evaluations of Core5 should consider and employ appropriate statistical measures to test/control for the effects of relevant student characteristics wherever possible.

**Educators.** Core5 is used by PreK–5 educators who themselves bring various backgrounds, experience, knowledge, and skill to the process of implementing the program. As with individual student characteristics, the Core5 Program Logic Model assumes that each educator’s unique constellation of personal attributes will contribute to program implementation in different ways. Effective evaluations of Core5 should therefore seek to identify and test/control for the effects of relevant educator characteristics.

**Leadership.** The next input category in the Core5 Program Logic Model is leadership at both the *school* and *district* levels. School leadership includes building administrators (e.g., principals, assistant principals) who provide instructional leadership and organizational management at the level of an individual school building. District leadership includes higher-level administrators (e.g., superintendents, curriculum directors) whose responsibilities and administrative duties extend beyond an individual school building.

## Core 5 Activities

The inputs identified above are necessary but not sufficient to achieve Core5’s intended outcomes; achieving these outcomes is a process that depends upon specific activities. These

activities specify what each input variable *does* to produce the intended short- and long-outcomes. Activities are sometimes called action variables, as they capture the actions necessary to achieve desired outcomes.

**Program.** Core5 uses an adaptive auto placement to identify an appropriate starting point in the program based on each student’s current skill level. As students work through the online portions of the program, Core5 collects real-time performance data using embedded assessment technology. This data informs students’ personalized usage targets, which are adjusted monthly as students progress through the program.

Included in Lexia’s embedded assessment are Skill Checks. These short, strategic checks for understanding occur at the end of each program level and evaluate student skills independent of program scaffolding, branching, or corrective feedback. Skill Check performance does not affect students’ moving forward in the program; rather, in combination with the real-time progress monitoring data collected as students interact with the program’s instructional activities, Skill Checks provide an additional data point showing how well students perform on key skills covered in the program.

When a student struggles in the online program, Core5 provides explicit instruction and scaffolding. If a student continues to struggle, the program recommends teacher-led instructional activities (Lexia Lessons) that can be delivered individually or in small groups. When students demonstrate mastery, the program recommends offline paper-and-pencil activities (Skill Builders) to support generalization and maintenance of newly learned skills.

Finally, Core5 populates the myLexia platform with students’ progress monitoring data and specific recommendations (e.g., which students need teacher-led instruction) to inform and guide teachers’ instructional planning.

**Students.** Each student begins Core5 by completing an adaptive auto placement. This determines an appropriate starting point in the program based on a student’s current skill level. Students then work independently through the online portion of the program according to weekly personalized usage targets. These targets are determined by students’ risk level – that is, the predicted likelihood of achieving end-of-year, grade-level benchmarks. Students progress through the program by meeting personalized usage targets and completing tasks and levels at their own pace. Design features addressing students’ needs for autonomy, competence, and relatedness support student motivation and engagement.

Students complete program tasks and move up levels as they demonstrate mastery; this ensures that each student is working on skills that are appropriately challenging. Students who demonstrate mastery can quickly advance to higher-level skills. Students who struggle with a particular skill receive explicit instruction and scaffolding in the online program. If they continue to struggle, students can receive an offline, teacher-led intervention (Lexia Lesson) based on program recommendations. When a student has mastered a skill, they can complete an offline practice activity (Skill Builder) to help generalize their learning.

**Educators.** Educators' primary point of interaction with Core5 is the myLexia platform, an online dashboard that provides educators with an accessible, actionable snapshot of their students' progress. Teachers should engage with the myLexia platform on a regular basis and use the data it provides to plan and/or modify instruction.

The myLexia platform identifies which students require teacher-led instruction (Lexia Lessons) and which students are ready for practice activities (Skill Builders). These targeted recommendations are based on real-time progress monitoring data gathered as students work through instructional tasks in the online program.

Educators can also review Skill Check performance in the myLexia platform. Skill Check scores complement other key performance data by providing clear verification that a student has mastered the skills taught in a program level and can demonstrate those skills independent of program scaffolding or feedback. This additional data point can support educators in making data-informed instructional decisions such as which students to prioritize for offline, teacher-led instruction.

**Leadership.** School and district leadership prepare staff for Core5 implementation through a variety of actions and activities designed to build capacity and increase buy-in, or willingness to engage in program implementation. These may include, but not are limited to, kick-off events, pre-implementation trainings, assessment of needs (e.g., for Professional Learning), or acquisition of resources necessary to implement the program (e.g., technological or personnel resources).

Following the decision to adopt Core5, school and district leadership actively plan for program implementation and monitor progress. The administrator view in the myLexia platform allows leadership to easily monitor student and staff usage and progress at the classroom, school, or district level.

Leadership also provides the resources necessary for students and staff to successfully implement the program. Such resources may include access to technology, staff training, or adjustments to the school schedule to allow adequate time for students to use the online program. Finally, prior to and throughout program implementation, leadership should actively work to create and/or improve the organizational structures and systems necessary to support program implementation.

## Core5 Short-Term Outcomes

Short-term outcomes reflect the most immediate, measurable impacts of Core5. These proximal effects indicate expected progress towards the intended long-term outcomes and are appropriate targets for interim assessments of program impact and efficacy.

**Students.** Core5's scope and sequence provides a systematic and structured approach to six critical areas of reading: phonological awareness, phonics, structural analysis, automaticity/fluency, vocabulary, and comprehension. As students progress through each level of the program, they accelerate skill development in each of these key areas necessary for proficient reading.

**Educators.** As educators use Core5, they develop expertise in using the program and the data it provides to deliver targeted instruction informed by student needs. As this expertise evolves, educators develop an increased understanding of the diverse literacy needs that students have and the most effective methods of addressing those needs. Because the strategies promoted by Core5 are based in the Science of Reading, educators' knowledge of science-based literacy instruction is also expected to increase with continued program usage.

Engaging with the program also allows educators to plan and deliver data-driven, differentiated instruction. By using the data and recommendations provided in the myLexia platform, educators can efficiently plan learning activities that meet the needs and ability levels of each student. Improvements in the use of data-driven, differentiated instruction, in turn, promote literacy learning that is more responsive to the needs of individual students.

**Leadership.** School and district leaders are tasked with developing and managing educational systems; as such, short-term outcomes for leadership are most appropriately measured at the systems level. As leadership fosters the ongoing implementation of Core5, school- and/or



district-wide structures and systems that support effective literacy practices are expected to improve. Such structures and systems may include the formation and maintenance of teams to support analysis of student data and associated instructional planning, curricular support for data-based differentiation, and organizational resources to support flexible grouping that best meets student needs.

As leadership improves the structures and systems that support data-driven instructional planning, they in turn enhance increased use of cohesive literacy learning practices at the school or district level, ultimately building towards the long-term goal of creating equitable opportunities for all students.

## Core5 Long-Term Outcomes

Expected long-term outcomes of Core5 reflect the ultimate goals of the program. More distal in time, long-term outcomes may emerge only after short-term outcomes are observed.

**Students.** Helping students become proficient readers is the overarching goal of Core5. This outcome is best reflected in student performance on reading assessments external to the program, such as state tests or nationally normed achievement measures. A critical intended long-term outcome of Core5 is improved performance on external assessments.

**Educators.** Long-term outcomes for educators who use Core5 include regular and skillful engagement in data-based decision-making and instructional planning. By engaging with and utilizing data in a responsive manner, educators improve their ability to provide effective literacy instruction to students with diverse needs. This increases educators' impact on student learning, ultimately allowing educators to support students in achieving the long-term goal of becoming proficient readers.

**Leadership.** For leadership, long-term outcomes of Core5 include effective, scalable, and sustainable literacy practices at the school and/or district level. Scalable practices can be expanded for use with more students in all types of learning environments across schools. Sustainable practices are those that can be maintained over time. As Core5 is scaled and sustained at the school or district level, leadership increases the capacity to provide equitable literacy learning opportunities for students.

## Supplement: Core5 Customer Success Partnership Logic Model

The Core5 Customer Success Partnership Logic Model illustrates the role of these *optional* partnerships in producing desired program outcomes, using the same four categories (Inputs, Activities, Short-Term Outcomes, Long-Term Outcomes) applied to the main Core5 Program Logic Model. *This supplement is applicable only to schools/districts that have opted to purchase a Customer Success Partnership.*

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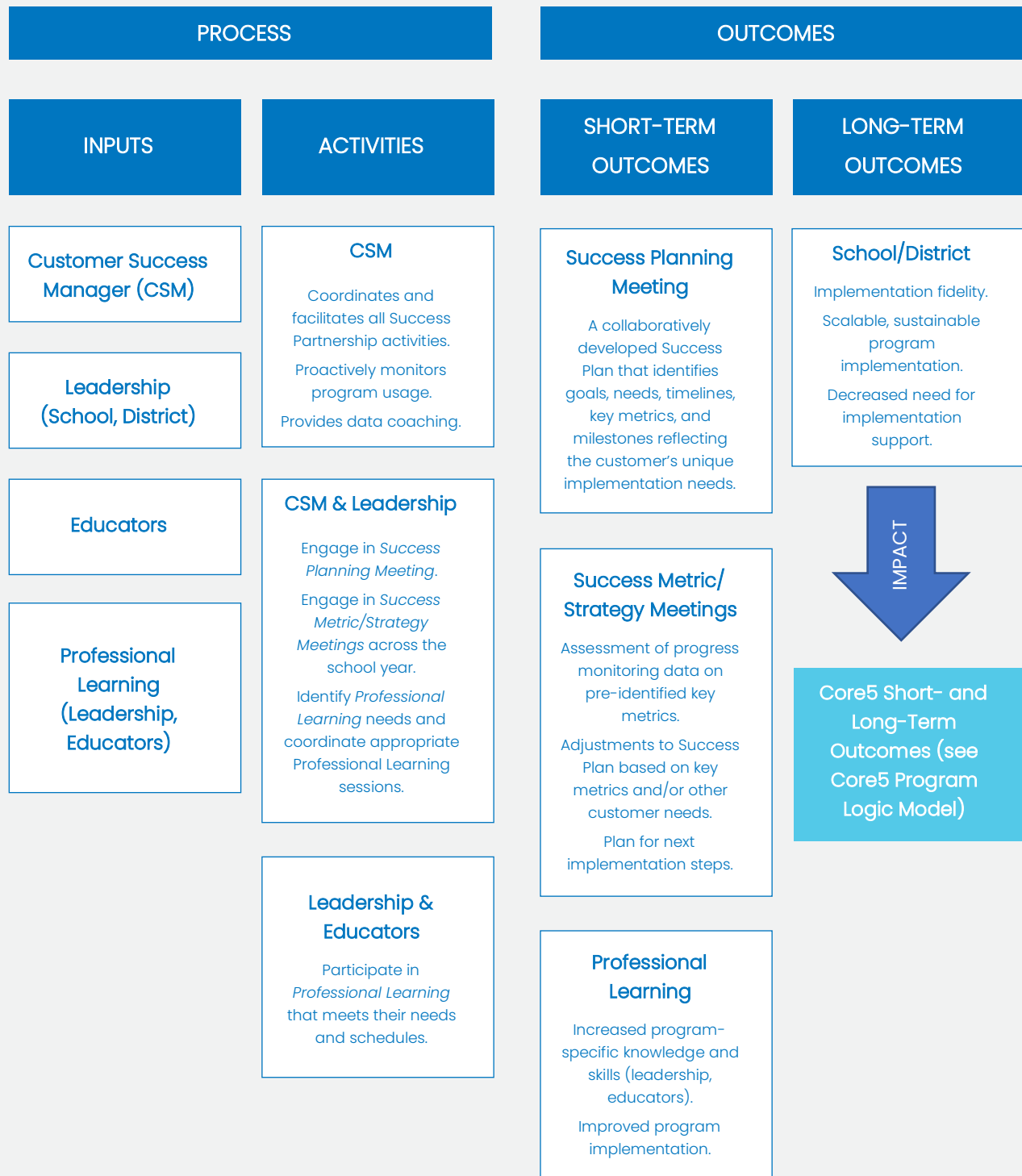
Customer Success Partnerships are designed to support customers in addressing challenges and achieving implementation success.

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Because Success Partnerships support program implementation, the variables of interest and intended outcomes differ somewhat from those specified in the Core5 Program Logic Model. Success Partnerships most directly impact activities and outcomes for educators and leadership (i.e., those responsible for implementing the program). As illustrated in the main Program Logic Model, the activities and outcomes associated with educators and leadership are in turn expected to influence student outcomes.

Each major component identified in the Customer Success Partnerships Logic Model is defined in more detail in the following sections. Again, the definitions provided here are intended to operationalize key variables and guide research or program evaluations examining the efficacy and impact of Lexia's Success Partnerships.

# Core5 Customer Success Partnership Logic Model (Optional)



## Core5 Customer Success Partnership Inputs

**Customer Success Manager (CSM).** All Success Partnerships include an assigned CSM. CSMs leverage expertise in literacy and language learning, practitioner experience, product knowledge, and implementation best practices to partner with and support school teams and/or district leaders.

**Leadership (School, District).** Leadership at the school and/or district level partners with the CSM to develop implementation plans that reflect the unique needs of their school and/or district and to proactively monitor implementation across the school year.

**Educators.** Educators include all school staff who participate in implementing Core5 with students. Depending on their role, individual educators may not interact directly with the CSM (unless the CSM also delivers assigned Professional Learning).

**Professional Learning.** Lexia's Customer Success Partnerships include a variety of Professional Learning activities that comprise key inputs in the implementation support process. Professional Learning offerings are available for school/district leadership as well as educators. The number and/or type of Professional Learning sessions varies across Success Partnership package offerings.

All Success Partnerships include access to Lexia Academy, an eLearning platform with product education courses that feature lesson-modeling, interactive content, and more. In addition, Live Online and/or Onsite Professional Learning sessions can be purchased at an additional cost and are designed to accommodate differing educator experience levels and unique training needs. These Professional Learning sessions are delivered by the CSM or an assigned Professional Learning Facilitator (PLF).

## Core5 Customer Success Partnership Activities

**CSMs.** CSMs coordinate all Success Partnership activities. They proactively monitor program usage across the school year and provide data coaching as needed. CSMs serve as the primary point of contact with school or district leadership, and actively facilitate all Success Partnership activities (described in more detail below).

**CSMs & Leadership.** Each Customer Success Partnership begins with a *Success Planning Meeting*. At this meeting, CSMs partner with school and/or district leadership to identify needs and develop a comprehensive Success Plan. The needs addressed by this plan may include specific resources, training, or other supports necessary for program implementation.

CSMs and leadership also engage in regular *Success Metric/Strategy Meetings* across the school year. At these meetings, the Success Plan is reviewed and revised based on implementation experiences and challenges. Many of the activities for leadership specified in the Core5 Program Logic Model can occur in the context of the Success Planning and Success Metric/Strategy Meetings.

Finally, CSMs and leadership collaboratively identify Professional Learning needs of leadership and educators and coordinate Professional Learning sessions to address those needs. The team selects from a variety of Professional Learning formats (e.g., Lexia Academy, Live Online or Onsite Professional Learning sessions) to best meet specific learning and scheduling needs.

**Leadership & Educators.** Leadership and educators participate in *Professional Learning* sessions tailored to their needs. These sessions may help educators engage with the myLexia platform, use student data to monitor progress and plan/modify instruction, or use the program's offline resources to provide appropriate intervention, support, or practice matched to student needs. They may help leadership use school or district level data to monitor implementation and progress. All Professional Learning sessions are designed to support successful program implementation and help build connections between Core5 and responsive literacy instruction.

## **Core5 Customer Success Partnership Short-Term Outcomes**

Short-term outcomes related to each of the key activities outlined in the preceding section are described below. Connections between short-term outcomes expected to result from Customer Success Partnership activities and those specified in the Core5 Program Logic Model are also highlighted.

**Success Planning Meeting.** The Success Planning Meeting results in a collaboratively developed Success Plan that identifies goals, needs, timelines, milestones, and key metrics for which

progress will be monitored. Success Plans reflect each customer's (e.g., school or district) needs and guide program implementation and short-term evaluations.

Metrics selected for progress monitoring are unique to each setting; however, as these plans are designed to support program implementation, the metrics selected are likely to reflect many of the key activities for educators and students identified in the Core5 Program Logic Model. These include student usage and progress within the program, educator engagement with the myLexia platform, use of offline instructional materials, and/or use of program data to plan and modify instruction.

**Success Metric/Strategy Meetings.** At these meetings, the CSM and leadership review and assess progress monitoring data on key metrics identified in the Success Plan. Based on this data and/or other needs or challenges that arise during the implementation process, the team may adjust or modify the Success Plan. Each Success Metric/Strategy Meeting concludes with a plan for next steps in the implementation process.

Through this iterative process, leadership is supported in developing the systems and structures that foster program implementation and creating cohesive literacy learning practices at the school and/or district level. Thus, the activities designed to promote these short-term outcomes also support achievement of the short-term outcomes for leadership described in the main Core5 Program Logic Model.

**Professional Learning.** Short-term outcomes of Professional Learning sessions include increased knowledge and skill among participants. While specific topics may differ across Professional Learning sessions, all sessions are designed to increase program-specific knowledge to support successful implementation of Core5.

## **Core5 Customer Success Partnership Long-Term Outcomes**

Because Success Partnerships are designed to support program implementation at the school/district level, long-term outcomes of these partnerships are most appropriately reported at this level. Additionally, long-term outcomes of these partnerships are expected to dovetail with short- and long-term outcomes specified in the Core5 Program Logic Model for leadership and educators, which, in turn, promote desired outcomes at the student level.

**School/District.** At the school or district level, a primary long-term outcome of Customer Success Partnerships is the implementation of Core5 with fidelity – as it is intended to be used (Carroll, et al., 2007). Implementing the program with fidelity is key to achieving Core5’s intended outcomes; in the absence of implementation fidelity, the desired outcomes are unlikely to be achieved (Proctor, et al., 2011).

In addition to implementation fidelity, long-term outcomes of Customer Success Partnerships include scalable and sustainable implementation of Core5. Implementation is considered scalable when it can be effectively expanded with fidelity; sustainable implementation can be maintained over time. As schools and districts develop the infrastructure necessary to support scalable and sustainable implementation, the need for formal implementation support provided through Customer Success Partnerships is expected to decrease.

Finally, because Customer Success Partnerships are designed explicitly to support the effective implementation of Core5, achieving the long-term outcomes identified for Success Partnerships is expected to directly contribute to the short- and long-term outcomes in the Core5 Program Logic Model.

## Conclusion

The Core5 Program Logic Model illustrates and defines the primary factors and processes directly involved in achieving Core5’s intended outcomes, and the supplemental Customer Success Partnerships Logic Model illustrates how these optional services can support Core5 implementation and, ultimately, program outcomes. Together, these components are intended to provide comprehensive guidance for research or program evaluation efforts examining the efficacy and impact of Core5 and/or Lexia’s Customer Success Partnerships.

## Core5 Theory of Change

The Core5 Program Logic Model illustrates the process by which Core5’s anticipated outcomes are achieved. The Core5 Theory of Change – presented in the following sections – highlights major theoretical and/or empirical findings that underlie and inform the processes presented in the Program Logic Model. In other words, the Core5 Program Logic Model illustrates *how* hypothesized outcomes occur while the Core5 Theory of Change provides insight as to *why* the program is believed to lead to these outcomes.

The Theory of Change is grounded in the Science of Reading, a term that refers to the accumulated evidence of over five decades of scientific research on reading acquisition and instruction (Reyna, 2004; Seidenberg, 2017). The Science of Reading demonstrates that learning to read and write is not something that occurs naturally; rather, it requires the systematic application of evidence-based instructional strategies in specific content areas (e.g., Castles, Rastle, & Nation, 2018; National Institute of Child Health and Human Development [NICHD], 2000).

Core5’s content is based in the *Simple View of Reading* (Gough & Tunmer, 1986; Hoover & Gough, 1990), a theoretical framework that defines the key skills involved in reading proficiently. The program’s instructional strategies are based in *Structured Literacy* (International Dyslexia Association, 2020), which applies the Science of Reading to classroom practice. Core5’s Theory of Change is also informed by motivational theory and research (e.g., Deci, Koestner, & Ryan, 1999), with design features that promote intrinsic *motivation and engagement* with the program. Finally, recent work in implementation science provides important contextual considerations central to Core5’s Theory of Change, with an emphasis on *implementation fidelity* (e.g., Carroll, et al., 2007).

### Simple View of Reading

The Simple View of Reading (Gough & Tunmer, 1986; Hoover & Gough, 1990) conceptualizes reading comprehension as the product of *decoding* (word recognition) and *linguistic (language) comprehension*. Each of these components, in turn, consists of several subcomponents; inefficiency in any of these areas may lead to reading difficulties (Carreker, 2022).



Each component and subcomponent of reading development – summarized below – is systematically addressed in Core5’s scope and sequence, which provides focused coverage in six key areas: phonological awareness, phonics, vocabulary, structural analysis, automaticity/fluency, and comprehension. These areas are consistent with the Essential Elements of Reading identified by the National Reading Panel (2000) and align fully with the Simple View of Reading. When Core5 is implemented as intended (specified by the Activities in the Core5 Program Logic Model), students receive targeted instruction in each of these key areas.

### *Decoding*

The first major component of the Simple View of Reading is decoding, or the ability to map printed symbols onto their spoken forms. The ability to do so easily and automatically frees cognitive resources, allowing a reader to focus on the deeper meaning of the text (Perfetti, 1985). Decoding consists of the ability to process the following subcomponents:

**Phonology.** Phonology refers to the speech sound system of a language. The English language has approximately 44 distinct phonemes, or sounds, that combine to form words. The ability to identify and manipulate these sounds – i.e., phonological awareness – is a necessary component of effective reading instruction (e.g., NICHD, 2000). Deficits in the realm of phonology have been identified in 90% of students who struggle with decoding (Blachman, 1995). Conversely, early instruction in phonological awareness can help prevent reading failure (Snow, et al., 1998). Core5 helps students build phonological awareness through a variety of tasks including rhyming, blending, segmenting, and manipulating sounds.

**Orthography.** Orthography is the writing system of a language. The English alphabet contains 26 letters that, alone or in combination, represent the language’s 44 phonemes. The alphabetic principle (an understanding that letters map onto sounds) provides a foundation for the development of reading skills. Proficient readers automatically associate letters (or groups of letters) with sounds (Gough & Tunmer, 1986; Hoover & Gough, 1990). Phonics instruction in which students learn to map letters onto sounds and repeated exposure to common letter-sound patterns build the decoding skills necessary for successful reading (e.g., Ehri, 2014). Core5 incorporates numerous tasks designed to increase students’ awareness of orthography. These

include matching sounds to letters, learning syllable types and rules for syllable division, and building knowledge of reliable spelling patterns.

**Morphology.** Morphology is the study of morphemes, the smallest meaningful units of words (i.e., prefixes, roots, and suffixes). Increasing a student’s knowledge of morphemes supports vocabulary development and comprehension of increasingly complex texts (Goodwin & Ahn, 2013; Henry, 2018). Students using Core5 learn meaningful word parts to support decoding and vocabulary development through skills that teach common prefixes, roots, suffixes, and Greek combining forms.

### *Linguistic Comprehension*

To become proficient readers, students must not only decode but also derive meaning from text (Gough & Tunmer, 1986; Hoover & Gough, 1990). Doing so requires the ability to understand oral (spoken) language; this ability, known as linguistic comprehension, underlies reading comprehension and comprises the second major component in the Simple View of Reading. Linguistic comprehension involves:

**Semantics.** Semantics refers to word meanings and relationships; in reading instruction, this translates to a student’s breadth and depth of vocabulary knowledge. Effective readers must understand the meanings of words, how words function in sentences (NICHD, 2000; Soifer, 2018) and be able to flexibly determine how words are used in text (Castles et al., 2018). In Core5, students build vocabulary knowledge and an understanding of word relationships through tasks focused on categorization, multiple-meaning words, shades of meaning, synonyms and antonyms, similes and metaphors, analogies, and academic language.

**Syntax.** Syntax involves an understanding of sentence structure, including the order and relationships of words in sentences. Knowledge of syntactic elements such as verb tense, pronoun reference, and subject-verb agreement supports the comprehension of oral and written language (Foorman, Herrera, Petscher, Mitchell, & Truckenmiller, 2015). Core5 helps students develop an understanding of syntax through tasks that teach parts of speech, sentence structure, and how structure impacts meaning.

**Pragmatics.** Pragmatics are the rules that govern the use and interpretation of language in context (e.g., social or academic). Explicit, systematic instruction in pragmatics facilitates the social use of language. Such instruction is particularly important for students who have difficulty with social language, such as those with autism spectrum disorders. Pragmatics are addressed in Core5’s online component and through offline, teacher-led lessons in which students engage in small-group activities that support their oral language skills as both listener and speaker.

**Discourse.** Discourse refers to the organization of spoken and written language (e.g., the flow of classroom conversation or the structure of a novel). The ability to understand and engage with written discourse is supported by the development of metacognitive skills; strategies such as comprehension monitoring and graphic organizers help students develop these skills (NICHD, 2000). Increasing background knowledge of a topic through listening, reading, discussing, or writing also supports a deep understanding of more complex texts (Willingham, 2006). Core5 helps build knowledge of discourse through listening tasks that teach developing readers about the structure of language and provide a framework for later reading comprehension. As students progress through Core5, they develop reading comprehension skills through interaction with increasingly complex texts that include a variety of genres and text types.

## **Structured Literacy**

Core5’s content is necessary but, alone, insufficient to support the program’s intended long-term outcomes. The second necessary element of Core5’s Theory of Change involves how this content is presented, or the instructional strategies employed. As a blended learning program, Core5 leverages the strengths of educational technology and teacher-led instruction to meet the needs of each student (O’Byrne & Pytash, 2015). All instructional strategies used in both the online and teacher-led components of Core5 are based in Structured Literacy.

The term Structured Literacy was coined and trademarked by the International Dyslexia Association to identify reading programs that apply the Science of Reading to classroom practice. A Structured Literacy approach is research-proven to benefit students and is crucial for students with or at-risk of developing reading difficulties (International Dyslexia Association, 2020; NICHD, 2000). Structured Literacy instruction is characterized by several key principles which are described below.

**Explicit.** When instruction is explicit, concepts and skills are taught directly (rather than assuming that students will learn them on their own). Explicit instruction includes ample opportunities for review and practice at a level of intensity that matches students' needs; in particular, students with reading difficulties require intensive opportunities for review and practice of explicitly taught material (Snow, Burns, & Griffin, 1998; Moats & Dakin, 2007). Each student using Core5 receives explicit instruction targeting the skills and concepts that they have yet to master. This instruction includes clear models and opportunities for practice.

**Systematic.** Systematic instruction presents concepts and skills in a logical order that progresses from simple to complex. A sequential approach is beneficial for all students and particularly important for those who struggle (Moats & Dakin, 2007). Core5's scope and sequence presents skills and concepts sequenced to follow the logical structure of language development from basic to increasingly complex.

**Cumulative.** In cumulative instruction, new learning is built upon prior learning. To become proficient readers, students must master foundational skills before building upon these skills (International Dyslexia Association, 2022). Effective instructional programs such as Core5 ensure that students have sufficiently mastered each skill before advancing. This allows for truly cumulative instruction, as students possess the necessary foundation upon which more advanced reading skills are built.

**Multimodal.** Multimodal instruction presents content to students using mixed modalities (e.g., auditory, visual) (Moreno & Mayer, 2007). This type of instruction combines listening, speaking, reading, and writing. Consistent with this approach is the use of engaging tasks such as moving letters or syllables into place to build words or color-coding sentences (International Dyslexia Association, 2022). As a blended learning program, Core5's combination of digital and offline (teacher-led and/or independent) components offers multimodal instruction.

**Diagnostic and Responsive.** Diagnostic and responsive instruction occurs when students' strengths and needs are accurately identified, instruction is based on this information, and each student's needs are adequately addressed. Students who are reading well below grade level, for instance, should receive instruction that targets underlying skill deficits (Lyon, Shaywitz, & Shaywitz, 2003).

Core5 provides instruction that targets student needs. An adaptive auto placement determines an appropriate starting point in the program based on each student's current skill level. As students work through the online portions of the program, Core5 collects real-time performance data. This data informs students' personalized usage targets, which are adjusted monthly. Core5 also populates the myLexia platform with students' progress monitoring data and specific recommendations to inform and guide teachers' instructional planning.

**Scaffolded.** Instructional scaffolding refers to temporary supports that assist a student in engaging with tasks that they cannot yet complete independently; scaffolding is subsequently withdrawn as students display increasing independence with a given skill (e.g., Belland, 2017). Effective scaffolding allows students to engage with increasingly challenging tasks without experiencing frustration that can impede progress.

Scaffolding is provided throughout Core5's instructional activities. Students who struggle in the online portion of the program receive scaffolded support within the program. If they continue to struggle, the program recommends offline lessons that allow teachers to provide scaffolding to support the development of challenging skills.

## Motivation and Engagement

Students using Core5 work through the online portions of the program independently, completing levels and tasks at their own pace and receiving support when they struggle. Ensuring that students actively engage with and remain motivated by the program is an important component of the Core5 Theory of Change.

Many educational technology tools rely solely on extrinsic incentives (e.g., badges) to promote student engagement. However, intrinsic motivation – i.e., motivation that comes from within – is generally associated with higher levels of effort, satisfaction, and learning (Deci, Koestner, & Ryan, 1999). The design of Core5 was informed by motivational theory and research demonstrating that learning platforms can build intrinsic motivation when they address students' needs for *autonomy*, *competence*, and *relatedness*.

**Autonomy.** In educational contexts, the term autonomy refers to students' perception of self-directed behavior or independent pursuit of goals and interests (Ryan & Deci, 2000). Core5

addresses students' need for autonomy. Students are provided with choices in each session, including opportunities to select tasks to work on and explore "Fun Facts" embedded in the background imagery of each level.

A student dashboard provides students with the opportunity to monitor their progress in Core5 and identify the skills they have mastered. Scaffolded versions of tasks within the online program allow students to work in a mostly autonomous fashion, even when they struggle with a difficult reading skill.

**Competence.** Students feel a sense of competence when they believe that they are capable of learning challenging materials. Learning environments that foster a sense of competence can increase student motivation (Turner, et al, 1998). Core5 incorporates several strategies designed to promote a sense of competence.

Core5's auto placement allows students to start the program working on skills at their current ability level and, thus, appropriately challenging. To progress in Core5, students must achieve a high level of success on each unit of a task. Scaffolding offers direct instruction and support when students need it so they can demonstrate skill mastery, move on to more difficult skills, and build a sense of competence.

**Relatedness.** Student engagement increases when meaningful connections are made between learning tasks and aspects of the outside world (Assor, Kaplan, & Roth, 2002). Core5 builds this sense of relatedness in several ways. Core5 connects students to places around the world with culturally based characters and regional music. "Fun Facts" also align Core5 to the outside world. Core5's Skill Builders give students an opportunity to relate skills learned in the program to academic subjects. Teachers also support a sense of relatedness when they help students connect what they are learning in Core5 to real-life situations (e.g., using the idiom "it's raining cats and dogs" on a rainy day).

## Implementation Fidelity

The final element in the Core5 Theory of Change is implementation fidelity, a term that broadly refers to the degree to which a program is implemented (or used) as intended (Carroll, et al., 2007). Fidelity is highlighted in the Core5 Theory of Change because it is considered a “necessary precondition” to achieve the outcomes specified in the Core5 Program Logic Model. If the program is not implemented with fidelity, it is unlikely to produce its desired outcomes (Proctor, et al., 2011).

The hypothesized short- and long-term outcomes associated with Core5 are therefore dependent upon the program being implemented with fidelity. When leadership, educators, and students fully engage in the Activities specified in the Core5 Program Logic Model, the program is considered to be implemented with fidelity. This multi-level approach to implementation is informed by contemporary research in school-based implementation science. While a comprehensive review of the implementation literature is beyond the scope of this document, considerations most pertinent to Core5’s Theory of Change are summarized below.

**Leadership.** Leadership often plays a key role in selecting a program to be implemented, securing the funding and/or resources necessary to implement the program, and planning for implementation (Aarons, Horowitz, Dlugosz, & Ehrhart, 2012; Weiner, 2009).

Effective leaders work to promote widescale buy-in, ensure that staff have access to trainings and/or materials necessary to implement the program, and foster a supportive climate for staff engaging in program implementation (Lyon, 2017; Thayer et al., 2022). They proactively monitor implementation progress, address implementation barriers, and persevere through the challenges that inevitably arise (Aarons et al., 2014). Through these activities, leadership creates the systemic conditions – referred to as implementation climate – that can support and sustain effective program delivery (Thayer et al., 2022).

**Educators.** While leadership supports the creation of organizational structures and implementation climate, educators are the “implementation agents” (Lyon, 2017) who deliver the program directly to students. To effectively implement Core5, educators must provide students adequate time to work independently through the online portions of the program,

regularly engage with the myLexia platform, use the data provided to plan or modify instruction, and deliver offline materials targeted to student needs.

Numerous educator-level variables have been linked to implementation outcomes. These include attitudes towards the program, sense of self-efficacy, expectations regarding program outcomes, and pedagogical skill and competence (Buabeng-Andoh, 2012; Han & Weiss, 2005; Merle, et al., 2023). Given that Core5 is technology-based, educators' attitudes towards and confidence with technology may also influence its adoption (Buabeng-Andoh, 2012). Professional development that builds the skills necessary to implement the program and includes ongoing support in applying these skills plays an important role in promoting implementation fidelity (e.g., Lyon, 2017).

**Timeline.** A common theme in implementation frameworks is the understanding that effective implementation is a long-term process. Achieving implementation fidelity requires focused and sustained efforts across time and at multiple levels. Full implementation fidelity may take three years or more to achieve (Fixsen, Naoom, Blase, & Friedman, 2005); understanding this timeline is crucial, as attempts to assess long-term outcomes in the absence of implementation fidelity may lead to inappropriate conclusions regarding the program's efficacy (Lyon, 2017).

Throughout the implementation process, monitoring fidelity with data and using this information to iteratively problem solve, adapt, and advance implementation is necessary. Additionally, measures of implementation fidelity should be supplemented with data pertaining to student outcomes to ensure that hypothesized links between the two are achieved (Lyon, 2017).

**Customer Success Partnerships.** Each school or district that chooses to adopt Core5 will differ in its capacity to implement the program. For those schools/districts that desire assistance, Lexia's *optional* Customer Success Partnerships are designed to facilitate the implementation process. Success Partnerships are tailored to the specific needs of each customer and emphasize the role of leadership and educators in promoting implementation fidelity, drawing on the theory and research outlined above.



In addition to implementation fidelity, Customer Success Partnerships work to promote other long-term implementation outcomes including sustainability, or the capacity to maintain program implementation over time (Proctor et al., 2011). This process is illustrated in the Customer Success Partnerships supplement to the Core5 Program Logic Model and is intended to support schools in developing the structures and systems needed to implement Core5 successfully in the long-term.

## Conclusion

The Core5 Theory of Change describes the major theoretical and empirical foundations underlying Core5's hypothesized effects. It is intended to be used with the Core5 Program Logic Model to provide leadership and educators with a comprehensive overview of the program and to aid evaluators in developing an informed research plan.

Leadership and educators should use the Core5 Program Logic Model and Core5 Theory of Change to familiarize themselves with the program's intended use, hypothesized outcomes, and the processes involved in achieving these outcomes. A thorough understanding of the connections between program inputs, activities, outcomes, and underlying theory and research can help leadership and educators effectively plan for and evaluate program implementation. An understanding of the mechanisms by which outcomes are achieved allows school teams to identify and address issues that may arise during implementation and effectively communicate program goals and outcomes to important stakeholders (Kekahio et al., 2014).

For research purposes, evaluators should apply the Core5 Program Logic Model and Core5 Theory of Change to design studies that contrast use of Core5 with alternative conditions in which Core5 (or some components of Core5) is not used. It is important that researchers develop evaluation logic models based on the Core5 Program Logic Model and Core5 Theory of Change to promote the validity of their research. Studies that do not measure implementation or address possible sources of treatment variation due to external factors have a limited ability to draw accurate conclusions about the effectiveness a given program (Peck, 2020).

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