

# Imagination Library Research/Literature Review

Report to:

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## TABLE OF CONTENTS

<b>Executive Summary</b>	<b>3</b>
<b>Introduction</b>	<b>5</b>
<b>Brief Description of Methods</b>	<b>6</b>
<b>Findings</b>	<b>8</b>
Research on Home-Based, Early Childhood Literacy Programs .....	8
Sample.....	11
Intervention .....	12
Outcomes and Measures .....	12
Summary .....	13
Characteristics of Programs and Outcomes .....	13
Inputs and Activities—How Parents Read Matters .....	16
Outcomes—Early Skills that Promote Conventional Reading .....	17
Summary of the Logic Model Components .....	19
<b>Conclusions and Recommendations</b>	<b>20</b>
Program Recommendations .....	20
Program Priority 1: Provide Guidance for Parents .....	20
Short-term Task: Standardize Implementation .....	21
Short-term Task: Establish Common Program Outcomes in all DPIL Implementations.....	21
Research Recommendations .....	21
Research Priority 1: Establish an Imagination Library Research Agenda .....	22
Short-Term Task: Establish a Dissemination Plan.....	22
Long-Term Task: Provide Ongoing Research Leadership and Support.....	22
Long-Term Task: Support Original Research.....	24
Other Recommendations.....	25
Non-Literacy Related Outcomes.....	25
Expand the Program Beyond Primary Caregivers.....	25
<b>References</b>	<b>27</b>
<b>Appendix A: Detailed Methods</b>	<b>30</b>
<b>Appendix B: Home-Based, Early Childhood Literacy Intervention Research</b>	<b>35</b>
<b>Appendix C: Bibliography</b>	<b>38</b>
Research Review Literature (Included and Excluded) .....	38
Additional Literature Added for Secondary Review .....	42
<b>Appendix D: Research Template</b>	<b>45</b>

## **EXECUTIVE SUMMARY**

Dolly Parton's Imagination Library (DPIL) works with partners nationwide and internationally to send over a million books a month to young children ages 0 to 5 across the country and internationally. Over the past few years, a number of research studies have been conducted by DPIL and their partners. In the fall of 2016, DPIL commissioned the Metiri Group to conduct a thorough review of existing research of DPIL and a literature review to situate Imagination Library's work in the literature base. The review of DPIL's research was presented in a prior document submitted to the Dollywood Foundation. This final report synthesizes the findings from the prior review with current findings from the literature reviews, including recommendations for programmatic and research priorities.

### **Review of literature on home-based, early childhood literacy programs and outcomes**

A review of the literature in the field of early childhood literacy was completed comprising two components: (a) research on the efficacy of other home-based, early childhood literacy programs; and (b) a literature review of early childhood literacy more generally. The purpose of these activities was to determine the current state of research in the field, compare DPIL's research designs and rigor to the literature base as a whole, and identify components for a research-based DPIL revised logic model.

The findings from the review indicated that most home-based literacy interventions combined book gifting with other activities, including parent training and reading demonstrations. Outcomes studied in the literature included behaviors, attitudes, emergent literacy skills, and conventional literacy skills. Most studies included both treatment and comparison groups, were conducted on short timelines, and included measures of demographic characteristics. These components minimized the impact of confounding variables on the outcomes and increased the rigor of the research. Overall, the literature base was more rigorous than the DPIL research, producing some significant findings related to the efficacy of some home-based reading interventions on early literacy outcomes.

The broader literature review indicated that introducing specific actions by parents during reading contributed to increased literacy outcomes in children. In addition, certain early and emerging literacy skills have been found to be predictive of conventional literacy skills, such as relating the text to a child's experiences and teaching letters and sounds during reading. Promoting these behaviors and outcomes in the DPIL implementation can improve the likelihood that children who participate in DPIL experience significant growth in early and emerging literacy skills.

### **Program Recommendations**

The following recommendations for modifications to the DPIL program are suggested based on the findings from this work.

### *Program Priority 1: Provide Guidance for Parents*

The current DPIL program provides books to families, but does not specify how the books should be used. Expand the program beyond book gifting to include guidance for parents to help them provide the literacy activities necessary to promote early literacy skills in children.

### *Short-term Tasks*

The use of DPIL gifted books in homes likely varies widely from family to family. Standardize the program implementation by communicating the minimum components which parents and children should participate in for each book received.

A consistent vision and common goals for all DPIL programs are essential to ensuring success. Establish common program outcomes and ensure that these outcomes are explicitly communicated to program staff at all levels.

### **Research Recommendations**

Like the programmatic recommendations, the following research recommendations are based on the synthesis of information from all components of this work.

### *Research Priority 1: Establish an Imagination Library Research Agenda*

An Imagination Library research agenda would outline the program's research priorities, questions, and goals. The research agenda should include questions that are important to local DPIL programs and questions that will contribute to the overall knowledge base about home-based literacy programs.

### *Short-term Task*

To increase the reach of DPIL into new communities, communication of the research efforts and findings is essential. Establish the dissemination plan prior to conducting the research to ensure the sharing begins as soon as findings are available.

### *Long-Term Tasks*

Providing leadership and guidance to build the capacity of local program staff will be essential to successful implementation of the research agenda. This may include conducting needs assessments, facilitating research partnerships, developing guides and measures, and establishing lines of communication through technology-supported medium.

Finally, the Dollywood Foundation should fund and support research which focuses on describing model implementations and establishing evidence of program efficacy and effectiveness. This research will contribute to both the knowledge base on DPIL's effectiveness and the broader knowledge base on effective home-based literacy practices.

## INTRODUCTION

Metiri Group is pleased to provide this final report. This report is the culmination of our work to conduct a thorough review of existing research of Dolly Parton’s Imagination Library (DPIL) and complete a literature review to situate Imagination Library’s work in the literature base. The findings can inform both the program logic model and future implementation and research efforts. The work took place in two phases. The initial work conducted by Metiri Group was intended to accomplish the following: (a) assess the quality and uses of Imagination Library’s current research/literature by situating this research in the broader literature base; (b) compare this research to standards set by the What Works Clearinghouse (WWC; U.S. Department of Education Institute of Education Sciences, 2014), American Educational Research Association’s Standards for Reporting on Empirical Social Science Research (AERA Standards; 2006), and the Common Guidelines for Educational Research and Development (Common Guidelines; U.S. Department of Education & National Science Foundation, 2013); (c) summarize and synthesize the existing Imagination Library research within the context of the broader literature base and the Common Guidelines; and (d) provide recommendations with respect to next steps regarding research on the program.

In the second phase of the work, Metiri researchers conducted a literature review to explore the field of early childhood literacy to provide information about (a) the literacy learning continuum in young children, (b) family and child outcomes appropriate for literacy interventions with preschool age children, and (c) theories of action supported by the existing research. This information is synthesized with the other information gathered through this effort to provide suggestions for revisions to Imagination Library’s theory of action and logic model, as well as recommendations for program implementation which may align the program with best practices as evidenced by the research in the field. The revised Imagination Library logic model, included in this document, is informed by the current DPIL research, other research on home literacy programs, and the overall early literacy research base.

This work answered the following questions:

1. What are the current research standards and practices in the field of early education, home-based, literacy interventions?
2. What is the level of rigor of the existing Imagination Library research? What claims can be made about the Imagination Library program based on the existing research?
3. What are the next steps for Imagination Library with respect to conducting research to examine the efficacy of the program in improving desired outcomes for children?

The second research question was answered in the Imagination Library Research Database and Database Summary, which were submitted previously to the Dollywood Foundation. As a result, these findings are not included in this document, but are integrated into the synthesis of information to answer the other research questions.

## BRIEF DESCRIPTION OF METHODS

This project used a literature review framework adapted from the WWC literature review processes and a research review framework adapted from the Common Guidelines. The project included two key components: a research review of Imagination Library's existing research and a broader literature review. The research review focused on categorizing the existing studies and assessing the rigor of the research based on accepted research practices and frameworks. A description of this process and findings specific to this component of the project were provided in a separate document. The literature review consisted of two parts. The initial literature review explored the broader literature base of early childhood, home-based literature interventions. A second, less formal review was completed of the early childhood literature base to explore the trajectory of literacy development in young children, identify short- and long-term outcomes of literacy interventions presented in the literature, and describe programmatic components that contribute to these outcomes. The methods are described briefly here, with a more detailed presentation provided as Appendix A.

For the research review, Imagination Library documents were provided to the researchers for review by Dollywood Foundation staff. All documents were reviewed and inventoried, with research studies highlighted for further review. All research studies were read by researchers and essential characteristics were documented in the database. Researchers took additional notes on the studies as needed. As a final step, each study was assigned a rating for research rigor on a scale ranging from low to high. The literature review utilized snowball sampling (using citations from DPIL research, then citations from that research) to identify an initial literature pool. In addition, citations from WWC early literacy reports (U.S. Department of Education, Institute of Education Sciences, 2007, 2015) and other meta-analyses were used to find additional sources. Following these reviews, original searches were conducted to locate any additional relevant literature. Abstracts were reviewed and compared against a screening protocol to establish an initial pool. The full text of studies included in the initial pool were reviewed and entered into the literature database. Additional studies determined not to meet the screening criteria were removed from the final pool during this review. Notes were taken on these studies as needed. Literature identified through this initial review served as the basis for the secondary review, which also used a snowball sampling approach to identify additional relevant literature for inclusion. These additional sources were read and notes taken by researchers related to components of literacy interventions, outcomes measured, and predictors of emerging and conventional literacy. This less formal review did not use an established protocol.

Information from all sources was synthesized by the researcher for this report. Studies from the literature review were grouped by study design and the findings were reviewed for patterns across outcomes and impacts. These patterns were then used to describe the literature as a whole, with particular attention to research rigor, which were then compared to the descriptions of the DPIL research as a whole. This comparison resulted in a synthesis to provide research recommendations which would produce DPIL research that is consistent with research conducted on other, similar interventions. For the secondary literature review, notes taken by researchers represented the data which were analyzed for patterns specifically related to

predictors of both early and conventional literacy. These patterns represent the findings from this review which informed the revised program logic model and program recommendations.

## FINDINGS

The discussion of findings begins with a summary of the research on home-based, early childhood literacy programs. The Imagination Library research is then considered within the context of this literature base, comparing the characteristics of DPIL's research with that of the literature base as a whole. In addition, a summary of the literature specifically related to the appropriate outcomes for interventions focused on early childhood literacy, as well as the components of the interventions in the research that produced these outcomes, is provided. To synthesize this information, a revised Imagination Library logic model is proposed which includes the inputs, activities, short-, medium-, and long-term outcomes (W. H. Kellogg Foundation, 2004) suggested by the existing literature, as being necessary for an intervention such as Imagination Library to have an impact on children's literacy skills.

### **Research on Home-Based, Early Childhood Literacy Programs**

Initial literature searches identified 72 possible studies on home-based, early childhood literacy programs. Sixteen of these studies were determined to meet the initial criteria for inclusion in this review, though several were subsequently removed when a more thorough review revealed they did not meet the criteria. Two of these removed studies were meta-analyses of the research on home-based literacy programs, rather than efficacy studies. Two were excluded as they were determined to be health clinic rather than home-based, and one was determined to be school rather than home-based.

All of the remaining studies met the initial screening criteria. These 11 studies were efficacy studies of home-based literacy interventions; focused on children ages birth to 5 years old and/or their families; and the intervention being studied took place in the U.S., Canada, Australia, or the U.K. (locations where DPIL is present). Initially the focus of the review was on studies conducted in the past 10 years, but this was expanded as there were few studies which fell within this timeframe. The literature base in this field is much older, with eight of the included studies published in 2002 or earlier. It is worth noting that several of the articles were reports of research on different implementations of the same book program. For example, there were three studies of the Bookstart program in the U.K. (two were the same program studied longitudinally), and four studies of the Reach Out and Read program in the U.S.

With respect to research design, 10 of the studies were either experimental or quasi-experimental, which are considered to be more rigorous than other designs. Four of these were randomized controlled trials (RCT), generally considered the best design for controlling for alternative explanations and, therefore, isolating the effect of the intervention on the intended outcomes. Only one of the studies was correlational, meaning there was not a comparison group, though they did compare participants' scores to state averages on the assessments. The research was only included in this review if the primary location was in the home and the primary intervention was book distribution, though all of the programs described in the literature had other components beyond delivery of children's books. The most common was delivery of materials and information about the benefits of reading to children through health care providers, while others had in-home health visitors who delivered reading materials and similar information to families. While the Reach Out and Read program often includes some

instruction for parents at the clinic, only those studies that did not have this component (and were therefore home-based) were included in this review.

The studies overall ranged from small to medium in size, with analytic sample sizes ranging from only 4 participants (2 in each group) to 203 (divided between treatment and control groups). The analytic sample size is often smaller than the original sample size, as it removes participants who were lost to attrition or who had incomplete data and were not included in the analysis. The average sample size for the analytical treatment groups was 51 participants, with a low of 2 participants and a high of 96. Several of the studies focused on low-income participants, primarily because the programs being studied were aimed at this specific population. Seven studies included only low-income participants, one study specifically focused on middle- and upper-middle income families, while another indicated the participants were representative of the overall city in terms of socio-economic status. The other studies did not report this information.

All of the interventions included the gifting of children's books, though the number of books and the duration of the intervention varied greatly across studies. None of the interventions in the research provided as many books to each participant as Imagination Library. Though every study did not provide a specific number, for those that did the number of books ranged from 1 to 20. The Little Books program focused only on providing books (McCormick & Mason, 1986), but interventions often included other materials and written information about the benefits of reading to children. For example, in the Bookstart program, books were provided in book packs which included other items such as stickers, coloring books, crayons, and activity ideas (O'Hare & Connelly, 2010). Reach Out and Read is administered at health clinics, where participants received books and a "prescription to read" from the physician or physician's assistant. In these studies, the control groups received standard health care services, for example at nearby clinics that were not participating in the intervention or on days when ROR participating staff were not present (Golova, 1999; Sharif, Reiber, & Ozuah, 2002).

All but one of the studies used a comparison group, and described the services this group received. One study compared two different interventions, providing training to parents in the assigned technique. In another study children received an introduction to the books in a school setting prior to the books being mailed home to participating students. In the latter intervention, the control group received non-literacy based instruction and materials. One study in the U.K. randomly assigned half of each health care provider's case load to the treatment, and half to the comparison (O'Hare & Connelly, 2010). Each provider would conduct a standard wellness visit with the comparison children, and the literacy intervention with the treatment group. Another study provided training to participating parents, and no specific treatment beyond the standard preschool activities to the comparison group (LaCour, 2010).

Demographic data were usually collected as part of the study recruitment process. The two groups were generally found to be comparable on these demographic characteristics. Pre- and post-intervention assessments were administered to both groups in only a few studies. This identification of the comparison groups prior to the intervention taking place allowed

researchers to describe the comparison condition, which typically were standard visits without the book gifting intervention. A baseline measure of the outcome of interest is important in quasi-experimental studies to establish that the two groups were similar prior to the intervention taking place. A description of the comparison condition is helpful to ensure that only the treatment group received the intervention. These are essential components of studies that establish causality by isolating the effects of the treatment on the outcomes.

With respect to the analysis, most studies compared the mean scores of the treatment group to the mean scores of the comparison group on the key variables. Six of the studies used statistical tests that allowed the researchers to control for confounding variables such as pretest scores and demographic characteristics. These more rigorous analyses are necessary for determining causation, but often require larger sample sizes and higher quality measures and data than other statistical procedures. Overall, the studies found the literacy interventions had positive impacts on children's and adults' attitudes toward reading and the amount of time adults spent reading with children. With respect to child outcomes, the shorter interventions (e.g., two to three months) typically did not see differences between the treatment and comparison groups, while longer-term interventions (e.g., 10 months to 2 years) did see significant differences on vocabulary measures, and on emerging reading skills. One study found significant differences on standardized assessments, but the length of time between the intervention and the assessments introduced rival explanations which limited the claims for causation.

Table B1 in Appendix B provides a summary of the basic characteristics of the studies that were reviewed.

### **Comparison of Literature to DPIL Research**

The research on Imagination Library and the literature base on home-based, early childhood reading interventions have some similar characteristics. The DPIL research and the literature have explored some similar outcomes, including home literacy environment, amount of time spent reading, and early literacy skills, and has found some similar, significant results. One clear difference between the two is in research design. The literature base used substantially more rigorous research designs, including quasi-experimental and experimental designs. DPIL researchers measured the impact of DPIL at the end of the intervention, after the participating children enter school. There were no randomized controlled trials of DPIL. The quasi-experimental DPIL studies used extant data from assessments given by school districts when students entered kindergarten. This allowed for a five year period over which children have many experiences beyond the intervention, and for children who received the DPIL intervention for different lengths of time to be included in the same analysis. These differences made ascribing causation nearly impossible. The literature had much shorter time periods between the beginning of the intervention and the measures of the impact, usually weeks or months rather than years. This shorter time frame made it easier to control the experiences of both the treatment and comparison groups, and provided a consistent exposure to the intervention to all participants. Shorter duration studies make it easier to control for confounding variables which may impact outcomes, but do also allow less time for the intervention to have an effect on the desired outcomes.

Comparisons of the DPIL research to the overall body of literature on other research characteristics follows.

One word of caution regarding the comparison of these two sets of literature. The literature base is predominantly published literature and, as such, was peer reviewed and met certain standards for research rigor and quality. While some of the DPIL research was published, the majority of the research consisted of evaluation reports completed by local evaluators at the request of program staff. The purpose of these efforts, therefore, was likely much different than that of authors conducting research with the intent of submitting it for publication. The few published DPIL research articles were more rigorous studies and compared relatively favorably with the research as a whole in terms of study design and rigor. The literature review also excluded studies that did not test the efficacy of an intervention, thus eliminating qualitative research and less rigorous quantitative research from the sample. For this reason, the comparisons generally focus on the most rigorous DPIL studies as they were most similar to the sample of literature reviewed.

### Sample

The general characteristics of the participants in the research was similar, children ages 2 to 5 and a parent, usually the mother. Interestingly, very few studies included fathers or other family members. The more rigorous DPIL research tended to focus on older children, usually age 5 or above, likely due to the reliance on extant data collected by schools rather than administration of unique assessments for the purpose of the research. The literature base included younger children (beginning at age 5 months) and assessments that were administered specifically for the research activity. The research overall provided relatively simple descriptions of the samples. Though there were some exceptions, relatively basic demographic information (e.g., race/ethnicity, age, gender) was provided, though some studies provided more detailed descriptions of the sample characteristics, such as including measures of parent's education and marital status.

Most of the DPIL studies used a convenience sample of participants. When a comparison group was included, it consisted of current classmates of DPIL students who took the same assessment but did not participate in DPIL. In comparison, the literature typically included comparison groups chosen prior to the intervention. For example, one Reach Out and Read study used children from a nearby neighborhood who attended clinics that did not offer the intervention as the comparison group. Another study offered the intervention to one class in a preschool and used another class as a comparison group. Some studies in both sets of literature utilized a matching design, using demographic variables to match children who did not participate in the intervention with similar children who did participate. This is considered a rigorous method for creating a comparable control group when experimental designs are not possible.

### Intervention

The interventions described in the literature tended to include more components than were described in the DPIL literature. The DPIL literature described the program as a “book gifting program,” with descriptions of the intervention entailing the monthly mailing and delivery of books to participating children. In contrast, the literature generally studied interventions that combined book gifting with parent training or guidance provided to parents. Guidance included suggestions for how to read with children, how often to read, and activities to do with children during reading. Interestingly, descriptions of how the interventions looked in homes were rare in both bodies of research, instead relying on data from parent questionnaires to assess home literacy practices such as amount of time spent reading with children and a child’s interest in reading. There were no observations of parents’ literacy practices nor specific measures of implementation in homes. The literature provided an unclear picture of how the interventions looked in practice and what components of the intervention were causing the measured outcomes.

### Outcomes and Measures

Studies from the literature included a variety of outcomes, including both child outcomes and those related to parents’ attitudes toward reading and reading practices with their children. In order to be classified as a “child outcome” for the purposes of this review, the respondent had to be the child rather than the parent. Child outcomes included school readiness, language development, emergent literacy skills, and vocabulary skills. Two studies in the literature included measures of academic achievement administered in a school setting (reading, spelling, math, and science; McCormick & Mason, 1986; Wade & Moore, 2000). Two of the studies in the literature included a pre-/post-assessment of child outcomes. This provided a baseline measure to assess children’s growth over time and as a comparison between the treatment and control groups to establish equivalency before the intervention took place. In the literature, outcome assessments were measured a set amount of time following the intervention, making the time between the treatment and assessment a constant in the studies. Other outcomes were typically reported by parents and included reading frequency, number of books, enjoyment of reading, parent and child attitudes and interest in reading, and home literacy orientation/environment. The definitions of these constructs varied in the literature, however. For example, vocabulary was sometimes included in an overall measure of emergent literacy skills and sometimes measured independently. Home literacy environment was typically a composite measure of variables related to frequency of reading and number of books, but sometimes included other variables as well.

While DPIL’s less rigorous research relied almost entirely on data from parent surveys and interviews, the more rigorous DPIL studies typically used extant data from assessments originally administered for other purposes. These assessments included kindergarten entry assessments and standardized reading and math assessments administered to all students once they were enrolled in school. There were no baseline measures included in DPIL research, though samples were compared on demographic variables. To create the groups for comparison, data from students who participated in DPIL were extracted from the assessment data and compared to data from students who were not exposed to DPIL to assess the impact

of the program. While these assessments typically have good reliability and validity for their identified purpose, they may not be aligned with the intended outcomes of DPIL or may not be interpretable at the level of detail needed to accurately assess DPIL's impact. In addition, using these school-administered assessments increased the length of time between the intervention and the assessment and, as children stop receiving DPIL books at age 5, caused the amount of time between the end of the treatment and the assessment of outcomes to vary from child to child. This introduced rival explanations and reduced both the likelihood of finding a positive effect of DPIL on these outcomes and the appropriateness of attributing any differences to the DPIL program.

### Summary

While the DPIL research was similar to the literature base in many ways, there were a few key characteristics where the DPIL research needed to be more rigorous in order to compare favorably with the literature overall.

- DPIL research should use experimental or quasi-experimental designs to control for rival explanations and establish causation between the DPIL program and the desired outcomes. This would include both a treatment and comparison group of children, ideally randomly assigned to either receive DPIL books or not, to effectively look at differences resulting from participation in DPIL.
- DPIL should focus on child outcomes and establish more proximal outcomes to the intervention (e.g., emergent literacy) rather than the distal outcomes measured by standardized, school-administered assessments (e.g., kindergarten readiness, conventional literacy skills).
- Research with shorter durations (e.g., one year) should be used to provide greater control over the research, program implementation, and rival explanations.
- Quasi-experimental research should include a baseline measure of the outcomes of interest in order to establish group equivalency and assess student growth over time.
- Reliable, valid instruments should be used to measure the stated program outcomes. These can be either existing measures or assessments that are validated for use in measuring DPIL, but should be administered by DPIL researchers for the purpose of conducting efficacy studies of DPIL.
- Both the treatment and comparison conditions should be adequately described. This will likely entail collecting data related to home literacy environments and reading practices in both DPIL and non-DPIL respondents. This is necessary to determine if participation in DPIL is changing literacy practices among participants when compared to their peers who are not receiving DPIL books.

### **Characteristics of Programs and Outcomes**

In order to provide additional information to inform Imagination Library's efforts, a secondary literature review was conducted to gather additional information about early childhood literacy. Specifically, Imagination Library was looking for information related to the "causal chain" of literacy development in young children. This part of the literature review sought to describe specific interventions or components of interventions that had been proven to result

in particular outcomes related to a child's future literacy development. For this effort, some of the excluded literature from the research review was reviewed, as were multiple meta-analysis studies and other sources identified through a review of references and database searches.

The literature base on the impact of home literacy practices on children's literacy development is large. In 1966, Durkin (cited in Thomason, 2008) explored the characteristics of children who began to read early, looking for characteristics of the home environment which were influencing their literacy prowess. She identified some patterns, including that early readers had been read to by caregivers from a very young age, had access to reading and literacy-focused materials in the home, and had been taught letter sounds by their parents as part of these early reading activities. Most of the subsequent literature of the impact of home activities on reading abilities has built upon Durkin's work.

Like many large literature bases, there were no absolute answers with respect to what works in promoting literacy in children. Reading is a complex, and predominantly internal, process, making it extremely difficult to understand all of the forces which contribute to the ultimate outcome of being a successful reader. Despite these inconsistencies, there were some consistent themes which emerged when considering what types of activities impacted children's literacy, and what particular early skills and factors were indicators of conventional reading abilities later in life.

The goal of this portion of the work was to inform and update the program logic model. The information from the secondary literature review informed the revisions to the Imagination Library logic model. Measurable short- and medium-term outcomes were added, and programmatic components which research indicated contributed to these outcomes were also included. The revised logic model includes a long-term or distal outcome that is beyond the scope of the Imagination Library program implementation but that the literature suggested are a logical progression following the attainment of the named short- and medium-term outcomes. As a result, the following DPIL logic model is proposed (see Table 1). The subsequent section provides information from the literature to explain the inclusion of the components of the model.

**Table 1. Proposed Imagination Library Logic Model**

Inputs	Outputs		Outcomes -- Impact		
	Activities	Participation	Short	Medium	Long
<p>Books mailed to homes in child's name</p> <p>Book sharing guides included with books</p> <p>Guidance provided online or through app</p>	<p>Caregivers read daily with children</p> <p>Caregivers read books multiple times</p> <p>Caregivers ask questions and model literacy practices</p> <p>Caregivers teach basic literacy skills (e.g., letter naming, object naming, memory/story retelling, letter sounds)</p>	<p>Families in target communities with children ages birth to 5</p>	<p>Enhanced home literacy environment</p> <ul style="list-style-type: none"> <li>• Early onset of caregiver-child book reading</li> <li>• Increased frequency of caregiver-child book reading</li> <li>• Increased duration of caregiver/child book reading sessions</li> <li>• Increased number of picture books in the home</li> </ul> <p>Increased interactions between caregivers and children during book reading</p> <ul style="list-style-type: none"> <li>• Increased child responses/ contributions during book reading</li> <li>• Increased reading skill practice</li> </ul> <p>Positive attitudes about reading and motivation to read among caregivers and children</p> <ul style="list-style-type: none"> <li>• Increased frequency of child requests for reading</li> <li>• Increased frequency of child book play</li> </ul>	<p>Increased emerging literacy skills</p> <ul style="list-style-type: none"> <li>• Concepts about print</li> <li>• Alphabet knowledge</li> <li>• Receptive and expressive vocabulary</li> <li>• Phonological awareness</li> <li>• Phonological memory</li> </ul>	<p>Kindergarten literacy readiness</p>

### Inputs and Activities—How Parents Read Matters

One interesting component of the Imagination Library intervention is the simplicity—books are sent to children’s homes. While individual implementations of the program vary according to the descriptions provided in the local documentation, the program does not have specific requirements in terms of what is done with the book after it arrives. However, as it is unlikely the book sitting in the mailbox will have any impact on children’s literacy, there is an assumption that the books are read to children once they arrive in the home.

The research on parents reading with children, however, suggests that how parents read to children makes a difference. In their literature review, Trivette and her colleagues (2012) found that multiple readings of the same book were related to the development of emerging literacy skills, but that improved outcomes resulted from adults engaging children in the text and encouraging participation. This was accomplished when parents asked questions and responded to children’s behavior during subsequent readings. Moreover, in her research focusing on four-year-old children, Mason (1980) found that parents who help children attend to letters and sounds, and give children opportunities to read and spell words while reading are building the foundational components of literacy. The literature, therefore, would suggest that providing guidance to parents with respect to what to do with the books that arrive, how to read them to their children, and some specific activities that they can complete with their children while reading the books, may contribute to improved literacy outcomes in DPIL participating children. This guidance can also standardize the implementation, removing some of the variation in reading practices that may cause some parents to engage children in higher quality literacy interactions than others (Rodriguez & Tamis-LaMonda, 2011). Interestingly, while there is some evidence that demographic and environmental characteristics have an impact on literacy development, researchers have found that home literacy activities, parents’ attitudes, and parent-child literacy practices have a positive impact that transcends these other variables (Pillinger & Wood, 2014). It is likely, therefore, that providing guidance to caregivers to help them engage their children in specific activities while reading can improve the literacy outcomes of DPIL participants.

Much of the published research that has mixed results focuses on two particular strategies of reading: dialogic and shared. Generally, shared reading consists of relatively informal interactions during the reading of a book intended to engage the child in conversation about the book. Dialogic reading involves a more structured set of questions and prompts which are given at regular intervals during reading. There is substantial variation, however, in how these practices are described and what strategies they include. Researchers have found specific components of these interventions to be effective independently, suggesting that substantial training in implementing a method in its entirety is likely unnecessary (National Early Literacy Panel, 2008). For example, Senechal (2006) found that having parents teach their children literacy skills during reading was more effective in promoting literacy than when parents simply read to children without any specific instruction. Dunst, Simkus, and Hamby (2012) found that relating stories to personal experiences, asking open ended-questions, and prompting a child to retell a story had positive impacts on children’s literacy development. Overall, the research suggests that increasing the amount of time spent reading with children improves children’s

language development, direct literacy teaching is necessary to build early literacy skills (Bus, van Ijzendoorn, & Pelligrini, 1995; Senechal & LeFevre, 2002; Senechal, 2006; Trivette, Simkus, Dunst, & Hanby, 2012). While some parents use these skills naturally with their children while reading, studies have found interactions that focus on specific literacy skills and those that promote more abstract discussion are far less common than references to pictures and simple summarizing activities (Hindman, Skibbe, & Foster, 2013). Parents rarely understand how children learn to read or what practices will be most beneficial, and thus need substantial direction in order to implement the most effective book reading strategies with their children (Sawyer, Cyclic, Sandilos, & Hammer, 2016).

### Outcomes—Early Skills that Promote Conventional Reading

As success of any program is measured in terms of attainment of its stated outcomes, deciding what outcomes are appropriate and can be reasonably expected to improve as a result of the intervention is essential. In the area of early childhood literacy, this problem is compounded by the simple fact that the targeted audience is extremely young. It is difficult to accurately assess their knowledge, skills, and growth. It is even more difficult to attribute any increases to a specific intervention given the speed of natural growth and change at this age and the number of confounding variables that are introduced during the course of a child's participation in DPIL. For DPIL, this involves selecting a continuum of outcomes which build over time. Beginning with measuring parent and home outcomes for very young participants, and measuring developmentally appropriate emerging literacy skills as the child progresses through the program. The literature provides substantial guidance with respect to the characteristics of home environments and early literacy skills that have positive relationships with later, more conventional reading abilities.

One word of caution that emerges from the research, however, is that the measured outcomes in the research have a tendency to align with the existing instruments (Manz, Hughes, Barnabas, Bracaliello, & Ginsberg-Block, 2010). For example, the Peabody Picture Vocabulary Test is considered a reliable and valid instrument for measuring both receptive and expressive vocabulary, and it is used in a large number of studies of early literacy. Receptive language is one of the outcomes that home-based literacy interventions have been commonly shown to positively impact (see Elley, 1989; High, LaGasse, Becker, Ahlgren, & Gardner, 2000; Kotaman, 2007; Payne, Whitehurst, Angell, 1994). There may be other outcomes which are positively affected for which existing measures are not available, making them less likely to be included in the research. Thus, while the research provides excellent guidance, program developers should be cognizant of the measurement availability bias that may be impacting the studies' findings. They should also be aware that developing instruments to measure DPIL's outcomes may be necessary and perhaps even desirable to ensure the measured outcomes are aligned with the expected outcomes DPIL participating families.

The DPIL studies from Shelby County, TN and Columbia, MO (Thompson, Klemp, & Stinson, 2016), among others, demonstrated that the program shows substantial promise with respect to impacts on home literacy behaviors, practices, and positive attitudes toward reading. In the literature, these are variables often included in the definition of a rich, home-literacy

environment. While definitions of the home literacy environment vary, Payne, Whitehurst, Angell (1994) defined it as including nine components:

- Overall frequency of shared book reading
- Age of onset of picture book reading
- Duration of shared picture book reading during one recent day
- Number of picture books in the home
- Frequency of child's requests for shared picture book reading
- Frequency of child's private play with books
- Frequency of shared trips to library
- Frequency of caregivers personal reading
- Caregiver's enjoyment of private reading

The literature shows significant correlations between a rich, home literacy environment and a child's early literacy skills. The relationship between these components and early literacy skills like receptive vocabulary and oral language, have been reinforced in other research as well. Debaryshe (1993) found the age of onset of home reading routines to be the strongest predictor of a child's oral language ability. In his meta-analysis, Lindsay (2010) reported positive impacts of access to books on child and parent attitudes toward reading, while OECD (2011) reported that a child's positive attitude toward reading had an impact on his reading abilities. Bus and her colleagues found positive impacts of joint book reading on language growth and emergent literacy (Bus, van Ijzendoorn, & Pelligrini, 1995). It seems clear from the body of research that promoting a rich, home literacy environment is a key component of developing early literacy skills.

Perhaps not surprisingly given the timing and limited structure of the intervention, researchers believe that book reading interventions have a greater impact on the "more proximal measures of language development than on the more distal variables such as reading achievement at preschool and school ages." (Bus, van Ijzendoorn, & Pelligrini, 1995, p. 2). There is some evidence in the literature, particularly in the meta-analyses, of what early literacy outcomes can be expected from book reading interventions with young children, as well as the relationships between these early outcomes and later, more conventional, literacy skills. The literature still leaves some questions, though, as to exactly which literacy activities or which components of the home literacy environment lead to specific literacy outcomes. Many studies only researched one outcome for children, giving limited information as to whether a specific intervention would have similar impacts on other outcomes. Even the meta-analyses tended to look at the intervention as one component (e.g., shared book reading, joint book reading, dialogic reading) and explored the impact on individual outcomes (Lindsay, 2010; Bus, van Ijzendoorn & Pelligrini, 1995), as isolating the individual components of the interventions and their impact would be extremely difficult. Payne, Whitehurst, and Angell (1994) did look at the impact of the components of their home literacy environment variable, and found that the composite measure of home literacy had a greater impact on language outcomes than any of the nine variables individually. This strongly suggests that these variables interact in some way to produce better outcomes than they would independently. The whole is greater than the parts, literally. Thus, while it may be satisfying to be able to connect each activity directly to an

individual outcome, literacy is too complex of a process for this to be an accurate reflection of the theory of action.

The relationship between these early skills and conventional reading skills are a little more difficult to decipher in the research given the difficulty of measuring conventional reading skills with young children. One of the most rigorous meta-analyses of the causal relationships among early childhood literacy skills was conducted by the National Early Literacy Panel (2008). With the goal of identifying interventions that promote positive literacy outcomes in young children, the panel analyzed the existing rigorous literature to provide empirical evidence to determine what skills were precursors to conventional literacy skills.

Even when controlling for other variables, there were several early literacy skills that were predictive of the more conventional skills like reading comprehension, decoding, and spelling. While there were some differences in what skills predicted each of these conventional skills, alphabet knowledge, phonological awareness, rapid naming of letters and objects, phonological memory, concepts about print, and oral language were consistently strong to moderate predictors of conventional reading skills (National Early Literacy Panel, 2008).

#### *Summary of the Logic Model Components*

The components included in the revised logic model are intended to both align with the research related to home-based literacy interventions and development of early literacy skills that lead to conventional literacy skills in young children. For DPIL, it is also important that the activities are easy to implement for parents with limited direction. There is some evidence to support that simply increasing the amount of reading can promote early literacy in young children. Enough evidence suggests that ensuring these outcomes requires more specific and targeted activities and practices that may or may not come naturally to parents to include them in the model. Providing additional guidance to parents will ensure that the implementation of DPIL is consistent from family to family and community to community. Standardizing the intervention will allow researchers to accurately describe the activities that comprise DPIL, increase the rigor of the research surrounding the intervention, and likely improve outcomes as the path of the book from the mailbox to the bookshelf becomes consistent for all DPIL participants.

## CONCLUSIONS AND RECOMMENDATIONS

This work for Imagination Library has consisted of multiple components, all of which contribute to this report and the recommendations provided in this section. First, Imagination Library's documents were inventoried in order to identify products which presented original research on DPIL's programs throughout the U.S. and abroad. Second, these research documents were thoroughly reviewed to assess the rigor and appropriate claims that could be made about the effectiveness of the program based on this literature. A literature review of the broader literature base was conducted for the purpose of determining the rigor of research on similar programs and to identify appropriate activities and outcomes that would ultimately lead to improved kindergarten readiness for DPIL participants. Finally, the literature was compared and synthesized, resulting in a revised logic model and a set of recommendations to guide DPIL's future work. A list of all literature reviewed for this work is included in the Bibliography in Appendix C.

These recommendations are informed by the literature presented in this report and aligned with DPIL's stated purposes of determining the efficacy of the DPIL program, marketing the program, and pursuing additional funding to expand the program into additional states and communities. These recommendations have been grouped into two categories. Program recommendations focus on changes or revisions to the DPIL program. Research recommendations present suggestions for enhancing the rigor of the research conducted on DPIL and implementing research that will make unique contributions to the literature on home-based, literacy programs. Within the two sections, the recommendations are provided in priority order. With respect to program and research, however, it is difficult to prioritize one over the other as it is important to provide equal focus on both aspects. They are not independent of each other, as the components of the program are the focus of the research and the research can serve to help program developers further refine the program. Thus, while they are presented separately, they are intertwined in practice.

### **Program Recommendations**

The Imagination Library program is well-established and implemented by communities nationwide and around the world. It is a simple idea, which is certainly part of what makes it so powerful. The simplicity, however, likely leads to wide variation in how the books are actually used with children in homes. This variation in implementation contributes to variation in outcomes for children, which can contribute to mixed results in DPIL's research on its efficacy. This component of the program is key to a child's literacy growth, thus clearly describing how books should be used in homes is an essential addition to the program description.

#### **Program Priority 1: Provide Guidance for Parents**

According to the literature in the field, specific actions taken by parents while reading with children have a significant impact on a child's attainment of literacy-related outcomes. In order to promote these types of activities among DPIL participants, it will be necessary to expand the program beyond book gifting to include short, detailed guidance for parents with respect to how to use the gifted books with their children. This guidance should include suggestions for

how long and how often to read with children, how to encourage different levels of thinking about the stories such as summarizing and relating the story to personal experiences, and how to target early reading skills like letter identification and letter sounds. The logic model provides descriptions of the types of activities which parents should do with their children, though specific strategies for implementation should be developed by literacy experts based on research-based practices. Both general guidance that applies to all books and specific guidance related to individual books can be provided through multiple avenues to reach all parents, including printed handouts, videos online, resources online, or even resources at community locations such as libraries and preschools.

#### Short-term Task: Standardize Implementation

As the research indicates that literacy-related activities interact to produce desired results, DPIL should standardize the program implementation by communicating the minimum components which should take place for each book received. Currently the minimum implementation of the program includes only delivery of the books to participating children. It is difficult to determine the impact of the program, however, as there is not currently a description of what parents and children should do with the book once it arrives. In order to provide all participating children with the most effective experience and increase the likelihood of achieving the desired outcomes, a clear description of the implementation in homes should be provided. This description might include the following guidance, specific to the age of the child:

- The number of times parents and children should read each book together
- The duration of each reading session
- Questions that parents should ask children while reading each book

#### Short-term Task: Establish Common Program Outcomes in all DPIL Implementations

Certain characteristics of the home environment and literacy interactions between children and caregivers have been shown to contribute to the development of early literacy outcomes. While there are a variety of early literacy outcomes, meta-analyses have shown particular early literacy skills to be predictive of later, conventional literacy skills. The current DPIL research suggests that local programs have selected the outcomes which they measure in order to assess program success. In order to ensure appropriate, research-based outcomes are the focus of all DPIL implementations, establish common program outcomes and ensure that these outcomes are explicitly communicated to program staff at all levels. Establishing these outcomes for all DPIL programs will help ensure a consistent vision and common goals. All programs should be aware of the short-term outcomes, which can be measured locally; medium-term outcomes, which can be measured with the assistance of research and evaluation partners; and long-term outcomes which are the ultimate goal but beyond the scope of the program implementation. These outcomes could potentially be measured longitudinally should positive impacts on short- and medium-term outcomes be realized.

#### **Research Recommendations**

The goal of the recommendations for DPIL research is to implement research that is as rigorous or more rigorous than the other research in the field of home-based literacy interventions. This

research is necessary in order to provide rich descriptions of program implementation and evidence to support the efficacy of DPIL to promote literacy outcomes in children. This information can then be provided to current and future DPIL partners in order to sustain and expand DPIL in communities worldwide. The first priority, the research agenda, establishes the foundation upon which the subsequent components can be built. This planning and capacity building is essential to the success of the remaining research activities.

*Research Priority 1: Establish an Imagination Library Research Agenda*

The current research on DPIL has been implemented almost exclusively at the local level, studying individual implementations. In some ways it is duplicative, over-measuring parents' perception of the program's value, for example. In other ways, it is disconnected, as it does not always define the outcomes in the same way or assess the same outcomes for children. Implementing rigorous research on DPIL will require substantial leadership and guidance from the highest levels of the program to ensure all research conducted contributes to the DPIL knowledge base and expands what is known about DPIL, its implementation, and its efficacy. The first step in this process is to establish an Imagination Library research agenda that outlines the program's research questions and goals. The research agenda should emphasize questions that are important to DPIL programs as well as those that will contribute to the overall knowledge base about home-based literacy programs. Questions should include those related to understanding and describing how Imagination Library is implemented in communities which can be answered through qualitative research. Questions should also address issues of the efficacy of DPIL with respect to the desired short- and medium-term outcomes in the logic model, which can be answered through quantitative research. In addition, questions that focus on the issue of "what works and for whom" can be answered through mixed methods research and provide substantial guidance to determine how to best implement DPIL such that all children and families receive the utmost of benefit from the program.

*Short-Term Task: Establish a Dissemination Plan*

Once the research is under way, communicating the progress of the research efforts and both preliminary and final results is essential to increasing the reach of DPIL. Establishing the dissemination plan prior to conducting the research will ease the process once findings are available. The plan should identify the purpose for the dissemination activities, the type of research DPIL would like to share, the target audience(s), methods for sharing that would reach the intended audience(s), and strategies for executing the plan. Research can and should be disseminated through multiple means aimed at a variety of stakeholder groups, including research publications; practitioner-focused publications; traditional media outlets; educational and parent magazines; conference presentations; social media; and presentations to local, regional, national, and international leaders.

*Long-Term Task: Provide Ongoing Research Leadership and Support*

Subsequent to creating a research agenda, the research leadership and guidance will be needed to build the capacity of local program staff to promote the type of research described in the research agenda. The following activities should be included as part of this leadership. These

can be completed through collaborations between the Dollywood Foundation team and consultants who specialize in research and evaluation.

- Conduct a needs assessment of DPIL projects to determine the current status of their research and any gaps which exist between the current research and desired practices as stated in the research agenda. These gaps can inform the types of support and technical assistance that are developed and provided to local program staff.
- Encourage program partners to establish research partnerships to implement studies aligned with DPIL's research agenda at the local level. Conducting rigorous research requires specific training and expertise which cannot be expected of those who are implementing DPIL programs. The most powerful research requires collaborative relationships between program developers, program implementers, and researchers.
- Provide research plans, templates, approved measures/instruments, and technical assistance to local partners to encourage research planning prior to program implementation. The purpose of research plans and templates are not to teach DPIL staff to conduct research independently, but to communicate the importance of advance planning of research activities and to encourage communication and collaboration between DPIL staff and local research partners. A template can also serve as a guide for researchers to help them match their efforts to DPIL's priorities. An example of a research planning template is provided as Appendix D. This is a general template which can be adapted for specific programs or specific purposes.
- The research in the field tends to align the desired outcomes with the existing measures for emerging literacy skills in preschool children. This suggests there is a lack of instruments for measuring these constructs, or that the instruments that do exist have not been adequately piloted for use in larger studies. In order to help local programs measure the desired outcomes identified for the DPIL program, measures will need to be located or developed and validated using a rigorous instrument design process. Instruments can be gathered from a variety of sources to begin this effort, including the research reviewed for this project; instruments typically used to measure readiness in schools, districts, and states where DPIL is implemented; and instruments previously used in DPIL research and evaluations. All instruments should be appropriate to assess change in children's knowledge in a pre-/post-administration, which may require additional research and pilot testing even for well-established instruments.
- As mentioned previously, collaboration between project directors and researchers is essential to ensure that research meets the needs of all stakeholders and is implementable within the communities where DPIL is located. In order to facilitate this communication, an Imagination Library online community of practice can be created for project leads and their researchers as a medium for exchanges, discussions, access to resources, training, and consultancy. This community can serve as a repository for all information related to research on the DPIL program, including the research agenda, research templates, instruments, and training materials; as well as a hub of communication between Dollywood Foundation staff and local researchers and project directors.

### Long-Term Task: Support Original Research

In order to assess the impact of DPIL on the desired outcomes in the final logic model, the Dollywood Foundation must fund and support original research that is aligned with the research agenda. This research should focus on describing model implementations and establishing evidence of program efficacy and effectiveness. A combination of rigorous research methods should be used.

- While qualitative research is not appropriate for assessing the efficacy of a program, it is useful for providing detailed explanations and descriptions to build a deep understanding of the DPIL program, how it looks in practice, and the meaning DPIL has for participants and stakeholders. In-depth, rigorous qualitative research gathers data from key stakeholders through methods such as observations, interviews, and focus groups. The analysis allows themes to evolve from the data and results in detailed descriptions of the program, the participants, and the outcomes as perceived by the participants. An example of this type of research was conducted by Singh, Sylvia, and Ridzi (2013) on the DPIL program in Syracuse, NY. This research provided a rich description of how the program was tailored to meet the needs of individuals from diverse cultures and the unique challenges experienced by facilitators and participants in this context.
- The existing DPIL research base has mixed results with respect to the impact of the intervention on children's conventional literacy skills. In order to provide further evidence to support DPIL's efficacy, it is necessary to conduct rigorous quantitative research that includes random assignment of children to DPIL and comparison groups, shorter implementation timeframes (e.g., one year), measures of implementation fidelity, pre- and post-assessments of outcomes of interest for both groups, and statistical analysis designed to assess the program's impact on the desired outcomes. This type of research requires advance planning, rather than post-hoc data collection, and adjustments to the typical DPIL implementation to accommodate the research design. It can be conducted in phases. For example, conduct an experimental study with the youngest participants, measuring the impact on home literacy environment as reported by parents. Later studies can use pre-/post-assessments of emerging literacy skills with older participants, aged 4 to 5 years. Several existing research studies on other interventions provide examples of research designs which might be adaptable for DPIL's research (see O'Hare & Connelly, 2010; Sharif, Reiber, Ozuah, 2002).
- Most of the efficacy research on DPIL has used extant data collected by schools either at kindergarten entry or in the later grades. Collecting data more proximal to the intervention would eliminate some rival explanations and increase the warrant for any claims made as a result of the analysis. In addition, it is recommended to collect implementation data to describe how parents and children use DPIL books in the home and measure short- and medium-term outcomes, rather than the longer term outcomes such as those measured by traditional standardized tests. This will increase the likelihood of finding positive outcomes of the DPIL intervention if they exist, and any variations in implementation can be useful in explaining the findings. Early findings can also be used for formative purposes, to refine the program to better meet participants'

needs. This is best accomplished using mixed methods approaches. By combining qualitative and quantitative data, researchers will be able to provide a more nuanced picture of the Imagination Library implementation and impact (i.e., what works, for whom, and under what conditions).

### **Other Recommendations**

This review has resulted primarily in recommendations related to program development and research, but a few other ideas have emerged during the literature review that may be worth considering in the future.

### **Non-Literacy Related Outcomes**

While the current DPIL research and the revised logic model include some affective measures, including attitudes and motivation, exploring other social-emotional outcomes that result from participation in the DPIL program may be useful in establishing its efficacy. This search of the literature did not uncover research that explored these outcomes, but the book reading experience may have a positive impact on parent-child bonding, child and parent self-efficacy, and relationships between young children and other family members. Additional literature would need to be explored to determine what knowledge base exists to support these outcomes for interventions similar to DPIL.

### **Expand the Program Beyond Primary Caregivers**

The existing research on home-based literacy programs almost exclusively focuses on the mother as the primary caregiver and provider of home literacy experiences (Manz, Hughes, Barnabas, Bracaliello, & Ginsberg-Block, 2010). DPIL could make a unique contribution to the literature by expanding the focus of the program to include specific guidance focused on other potential providers of literacy experiences. For example, book selection and guidance could be designed specifically to engage fathers in the home reading experiences. Additional research would need to be consulted to identify genres and activities of interest to male caregivers as very little was found on this topic for this review. Instructional guidance could also be written specifically for educators, such as teachers who interact with DPIL participants in preschool or childcare settings, or K-6 teachers who may interact with former DPIL participants and current participants' siblings. This guidance could focus on expanding the book reading to include more targeted literacy skills or content instruction related to common themes present in the DPIL literature, such as persistence, friendship, and honesty. This expansion can increase the visibility of the program in communities, as well as increasing research opportunities through looking at the impact of including these additional stakeholders and content.

Imagination Library is well-respected in the communities in which it is implemented, and worldwide among those who are familiar with the program. The findings and recommendations provided in this report are based on an extensive review of both the existing DPIL research and the research in the field of home-based early childhood literacy programs and, to some extent, early literacy interventions more generally. The program is loved by parents and children who benefit from the free, age-appropriate books which arrive monthly in their mailboxes.

Increasing the reach and effectiveness of the program can begin immediately by implementing the high-priority recommendations, and be sustained longer term through short- and long-range planning and research activities. Overall, DPIL is a promising program which deserves a substantial investment in its future.

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## APPENDIX A: DETAILED METHODS

The following is a detailed description of the methods used for all portions of this work.

### **Instrumentation**

Three instruments were created for use in this project: a literature review protocol to structure the overall review of the existing literature base, a DPIL document inventory for creating a record of all documents in the Imagination Library Google Drive, and a research review protocol which served as the foundation for the review of DPIL's existing research and the resulting research database.

#### Literature Review Protocol

The Literature Review Protocol was based on the format established by the WWC for literature reviews. The literature review focused on studies that met the following criteria:

- Research related to home-based, literacy interventions.
- Studies completed with children ages birth to 5 and/or their families, within the last 10 years (2006 to present), that use quantitative or mixed methods approaches.
- Seminal literature in the field, regardless of date of publication, was also reviewed as appropriate. Specific attention was paid to locating and reviewing studies that included rigorous study designs (i.e., experimental and quasi-experimental) to explore the efficacy of interventions and outcomes related to literacy and/or kindergarten readiness.
- Initial literature identification consisted of searches of the WWC database, WWC intervention reports, and literature previously cited by DPIL research. Additional literature was located through a snowball process, identifying relevant literature cited in other documents including previous meta-analyses. Search terms were developed based on those used in published meta-analyses and vocabulary identified during the initial reviews. These included the following terms: books, read, home, family, access, distribute, borrow, day care, preschool, and early childhood. These terms were combined, truncated, or ordered based on guidance provided by specific databases. Databases focused on education and literacy were utilized for this search.

When possible, abstracts were used to determine if studies met the inclusion criteria; complete study texts were reviewed when the abstract was not adequate for this screening. In total, 72 studies were initially reviewed. For the 16 studies that met these initial criteria, the reviewer completed the protocol which included the following descriptions:

- Setting (e.g., geographic location, physical location)
- Study design
- Sample size(s)
- Sample characteristics
- Description of intervention
- Comparison condition (if applicable)
- Eligible outcomes and measurement method
- Other outcomes

- Support for implementation
- Variables (independent, dependent, covariates)
- Analysis
- Findings

An additional five studies were excluded during the final screening as the full review indicated the studies did not meet the desired criteria, resulting in a final pool of 11 studies.

A secondary literature review was also conducted. The review identified potential short- and medium-term outcomes suggested by the literature as having an effect on the desired long-term outcomes related to children’s literacy readiness and achievement. For this engagement, outcomes were defined as “specific changes in program participants’ behavior, knowledge, skills, status, or level of functioning” (W. K. Kellogg Foundation, 2004). In addition, researchers explored specific program components of the interventions in the research that produced these outcomes. This review built upon the prior review, using a combination of sources located for the initial review (including those that were excluded), a “snowball” method of searching references from collected papers for additional appropriate literature, and a citation search focused on identifying recent literature that cited other articles and authors determined to be appropriate for this review.

#### DPIL Document Inventory

A document inventory was created as a record of all files stored in the DPIL Google Drive, which contained 183 documents. The inventory included the following elements:

- Folder name
- Internal folder name
- File name
- General description
- DPIL research Y/N?

The inventory was documented in a Microsoft Excel file which was provided to Dollywood Foundation staff.

#### DPIL Research Database

A research database was created to provide a summary of the Foundation’s existing research with respect to the research designs and characteristics described in the Common Guidelines. An assessment of research rigor was based on accepted research practices using AERA Standards and the WWC standards as a guide. The database of the Foundation’s research included the following elements:

- Document name (Text: file name)
- Location of program/study (Text: country, state, and/or city)
- Research type (Options: Foundational, Early Stage/Exploratory, Design & Development, Efficacy, Effectiveness, Scale-up, NA, Not enough info)
- Methods (Options: Qualitative, Quantitative, Mixed, None, Other, Not enough info)

- Purpose (Options: Contribute to core knowledge, Develop solutions, Explore impact, Not enough info)
- Design (Options: Case study, Grounded theory, Ethnography, Descriptive, Correlational, Quasi-experimental, Experimental, Not enough info)
- Sample/Source (Text: description of respondents and measures)
- Outcome(s) (Text: categories were derived from the outcomes included in the studies, including Program perceptions, K readiness [literacy, math, social skills], Home literacy practices, Student achievement, and Social-emotional readiness)
- Findings (Text: summary of key findings)
- Limitations (Text: summary of key limitations stated by authors or perceived by researchers)
- Reason(s) for Common Guidelines classification (Text: Common Guidelines descriptions applied to the individual research context)
- Overall rigor (Options: Low, Medium-low, Medium, Medium-high, High)
- Rigor justification (Text: researcher's explanation of rigor rating)
- Authors/APA citation (Text: citations based on information provided)
- Notes (Text: researcher's comments)

Publications that served as written documentation of Imagination Library's original research and evaluations, as documented in the DPIL Document Inventory, were included in the database. Documents such as PowerPoint presentations, newsletters, or other less formal presentations of the research and/or evaluations were not included as they did not provide adequate detail for assessing the rigor of the overall study/research. For this database, 42 documents identified during the inventory as reporting DPIL's research were reviewed.

### **Data Analysis**

*Analysis for Question 1: What are the current research standards and practices in the field of early education, home-based, literacy interventions?*

The information included in the Literature Review Protocol for each study was used to complete a synthesis of the literature base. This synthesis across all studies provided a complete picture of the research base specifically related to DPIL and the existing research. Based on the purpose of this effort and potential variations in type and quality of research, qualitative procedures were used to synthesize information from all research.

Using the information from the Literature Review Protocol, the studies were grouped by research design for the first step of synthesis, and each set of similar studies were compared and contrasted on all of the research components to describe the research as a whole. Findings from these studies were then analyzed using qualitative analysis techniques. The text of the studies' findings represented the qualitative data and was reviewed and coded based on repeated ideas or themes that emerged across the studies. These themes were organized into concepts or categories that ultimately resulted in patterns to describe the findings across the

studies (Glaser & Strauss, 1967). The results of this portion of the synthesis were presented as interpretations of the body of literature in this report.

Metiri researchers used the existing findings, along with our expertise related to early literacy interventions, to add value by identifying patterns across studies; describing key discrepancies in the research; and drawing informed, supported inferences and conclusions related to the issue of the efficacy of early literacy interventions that can inform the Foundation's future work. Metiri used the information from the secondary literature review to provide insight into the literacy-related outcomes which were supported by the existing research, including the pattern of causation supported by the existing research from the intervention/activities to short-, medium-, and long-term outcomes. This question was answered in this final report.

*Analysis for Question 2: What is the level of rigor of the existing Imagination Library research? What claims can be made about the Imagination Library program based on the existing research?*

The information in the DPIL Research Database was used to make a determination related to the rigor of the existing research and the appropriate claims based on the research designs and findings. In order to provide an easy-to-understand guide for research rigor, a scale was created with five levels ranging from Low to High. These levels essentially coincided with the Types of Research established by the Common Guidelines, with Foundational studies on the low end of the rigor scale, and Effectiveness and Scale-up studies on the high end. In assigning the level, however, reviewers considered the following characteristics of the research design and implementation: (a) the alignment of research questions with the design, methods, and analysis; (b) appropriateness of the study sample and data collection methods; (c) use of appropriate and rigorous analysis; (d) appropriate interpretation of findings consistent with the design, methods, sample, data collected, and analysis; (e) inclusion of a comparison or control group; (f) reliability and validity of the instruments and measures; (g) use of a student outcome measure; (h) the use of statistical methods to control for confounding variables (i) and generalizability to other DPIL programs and implementations. The first four characteristics were used for qualitative studies, while quantitative and mixed methods studies were assessed based on the complete list. In order to receive a rating of High, a quantitative or mixed methods study would have to meet the What Works Clearinghouse standards either with or without reservations. As the current standards in the field of education research focus on generalizability and establishing causation (and the goal of the current DPIL research is to investigate its efficacy), a qualitative study could not receive a rating of High regardless of the level of rigor.

After all documents had been reviewed and the database complete, all entries in the database were read by a researcher to assess patterns across the studies. These patterns were summarized to provide feedback for Imagination Library with respect to the level of rigor of the current DPIL literature base and the claims that can appropriately be made about the efficacy of the program based on this research. This question was answered in the DPIL Research Database Summary report.

*Analysis for Question 3: What are the next steps for Imagination Library with respect to conducting research to examine the efficacy of the program in improving desired outcomes for children?*

Based on the results of the literature review and research database, Metiri researchers collaborated with Dr. Joseph Goins and designated Imagination Library staff in order to determine how the findings can best inform the Foundation's work. These recommendations included three components: a suggested program logic model which includes research-informed short-, medium-, and long-term outcomes as well as suggested adjustments to implementation aligned with these outcomes; program and research recommendations for DPIL programs and the Foundation more generally; and additional suggestions for expanding the DPIL program into new areas through additional research. This question was answered in this final report.

## APPENDIX B: HOME-BASED, EARLY CHILDHOOD LITERACY INTERVENTION RESEARCH

**Table B1. Research on home-based, early childhood literacy interventions**

Study Author/Year	Study Design	Sample	Intervention	Child Outcomes	Other Outcomes
Golova 1999	RCT	135 Hispanic parents, mostly low-income, single mothers with limited English proficiency	Families received bilingual children's board book, age-specific bilingual handout explaining how to share and enjoy books with kids, & literacy-related guidance at 3 well child visits over a 10 month period (ROR)	Language development (parent reported)	Frequency of parent/child reading; parental enjoyment of reading to child; number of children's books/total books in home
High 1998	Quasi-experimental	151 low-income, English-speaking families with children 12-38 months old	Families received at least 2 children's books at well-child visits with accompanying educational materials (ROR)	None	Child centered literacy orientation, sleep variables
High 2000	RCT	153 low income families with children 5-11 months old	Same as previous	Language development (parent reported)	Child centered literacy orientation, sleep variables
LaCour 2010	Quasi-experimental	22 volunteer, low-income parents with 4-year-old children	Parents attended 3 training sessions (information, modeling, & practice) for 2 hours total to learn effective storybook reading; children received 20 free storybooks over a 7 week period	Emergent literacy skills	Perceptions of child's attitudes/interest in reading
Levenstein et al 2002	Correlational	84 first graders, former Parent Child Home Program participants	Trained home visitors engaged in play sessions with parents and 2-3year old children twice weekly for 2 years. Children received gifts of toys or books.	School readiness	None

Study Author/Year	Study Design	Sample	Intervention	Child Outcomes	Other Outcomes
McCormick & Mason 1986	RCT	Preschool study: 52 preschool children in 4 Head Start classrooms; K study: 24 children for follow-up study	Preschool children received 15-mins of instruction once a week for 6 weeks involving reading/modeling of predicting/questioning of a Little Book, which was then mailed home; In K, books were just mailed home with no additional instruction.	Preschool study: Emergent literacy skills; K study: Reading and spelling	Preschool: Parent perceptions and teacher perceptions of "teachability" K: Teacher perceptions of likely 1st grade success, parent perceptions of use of materials, child interest
O'Hare & Connelly 2010	RCT	203 parents of 2-year-old children receiving annual health care visit	Health visitors trained in book pack presentation. Health visitor delivered Bookstart pack (bag, 2 books, coloring book, crayons, numbers bedroom frieze, book ownership stickers, book guide of suggested books, activity ideas to do with books) at 2-year health visit	None	Parental attitudes toward reading/books, parental attitudes to sharing/reading books with child, family library use
Pillinger & Wood 2014	Quasi-experimental & case study	4 families with 4-year-old children	Parents received instructional materials including written information and DVDs with examples of the techniques. Parents implemented the assigned technique with their children over a 6 week period.	Concepts of print, writing vocabulary, rhyme awareness, & word reading	Attitudes, literacy activity
Sharif et al 2002	Quasi-experimental	200 primarily low-income families from two pediatric clinics	Reach Out and Read (ROR) administered by 7 physicians & 12 residents for 3 years	Pre-reading skills (Expressive/ Receptive vocabulary)	Home literacy orientation, home reading activities

Study Author/Year	Study Design	Sample	Intervention	Child Outcomes	Other Outcomes
Wade & Moore 1998	Quasi-experimental	41 Bookstart participating families; post hoc matched comparison group	Families given "book pack" (children's book; bookmark; poster; poem card; & information about library facilities, the value of book sharing and book purchase) at 9 month health visit	School readiness	None
Wade & Moore 2000	Quasi-experimental	Same as previous	Same as previous	English, math, & science achievement	None

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## APPENDIX D: RESEARCH TEMPLATE

**Purpose:** Why you are conducting the research.

**Research Question(s):** Question(s) your research will answer.

**Exploration:** How/what is the *(story, issue, reason, or problem)* of *(name program or component of program)* for *(participants)* in/at *(location or description)*?

**Implementation:** With what level of fidelity to the DPIL model has *(name program or component of program)* been implemented in *(specify location, population, etc.)*?

**Impact:** How does *(component of DPIL or other independent variable)* impact *(outcome from logic model/dependent variable)*?

**Research Hypothesis:** What you think (hope) is the answer to your question(s).

We believe that...

**Research Methodology/Design:** The rigorous methods you will use to ensure your research answers your question.

Select an approach...

Qualitative (explore, understand, describe): (e.g., ethnography, case study, phenomenological, narrative)

Quantitative (test theories and relationships): (e.g., exploratory, single case, correlational, quasi-experimental, experimental)

Mixed methods (combination): (e.g., sequential or concurrent, emphasis on qualitative or quantitative)

Sample. Who will participate in your study, including how many people and relevant characteristics (e.g., age, participation status, SES, ethnicity, location).

**Data Collection:** Describe the data you will need, how you will collect each type of data, the instruments you will use, and who will collect the data.

**Data Analysis:** Describe how you will analyze the data and explain how this will answer your research question(s).

**Merit:** Describe how your research contributes to both the DPIL research base and the overall literature on home-based literacy interventions. How is it different? How does it go beyond what has been done before?

**Reporting/Dissemination:** Describe how you will share the results of your research, include the purpose of your dissemination activities, format (e.g., formal report, memo, article, presentation, webinar) and intended audience.