The Impact of Lexia Reading Program on Early Childhood Literacy: A Case Study of Kindergarten Students

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Abstract:
The purpose of this study is to analyze student progress after the frequent usage of a computerized reading program that provides phonics instruction and gives students independent practice in basic reading skills.

Keywords: Lexia, assessment, evaluation, reading, phonics

Introduction:
Lexia is a research proven, blended learning program that accelerates the development of fundamental literacy skills for students with diverse ability levels from grades preK-5. It provides explicit, systematic, personalized learning in the six areas of reading instruction, targeting skill gaps as they emerge and provides educators with the data and student specific resources for individual or small group instruction. (J. Priest, personal communication, Nov. 27, 2017) The program includes activities that focus on the following six components of reading: phonological awareness, phonics, structural analysis, automaticity/fluency, vocabulary and comprehension.

It is designed for regular use, consisting of two to five weekly sessions of twenty to thirty minutes each, in a lab or classroom setting. It is compatible with a tiered model of instruction and designed to be used no more than thirty minutes per session. The program is intended for use twice per week for students reading on grade level or above. For at risk students, it gives repetition and frequent remediation with needed skills. Moreover, student have access to a dashboard that gives the following information: a) Weekly usage goal, b) Total minutes completed for the week, c) Minutes needed to meet weekly goal, d) Total units completed for the week, e) Minutes added during current session, f) Units added during current session, g) Logout, and h) Return to activities. Students begin each session with a warm up and the goal is to promote speed of processing and automaticity for previously acquired skills. Note that the student will choose one of two warm-ups and try to beat his or her highest score.

Lexia Reading Core 5 is designed to meet and to exceed rigorous state standards, including Common Core State Standards. In addition, when students first log in, they complete a set of placement activities.
will be automatically placed at their appropriate starting level in the program according to their performance. Students begin with their grade level skills and branch up or down to a level that is not too easy or too hard. Students are assessed on word identification and comprehension skills at each level. Note that most students finish the auto placement within twenty minutes. If the session is interrupted, all data is saved and stored until the next log in.

The six components of reading are represented by color coded icons used throughout the program. Moreover, each grade level has a certain number of levels. Note the chart below:

**Grade Level of Material:**

<table>
<thead>
<tr>
<th>Grade Level of Material</th>
<th>Pre-K Level 1: A Picnic in the Woods</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>Level 2: A Day at the Beach</td>
</tr>
<tr>
<td></td>
<td>Level 3: A Snow Day in the City</td>
</tr>
<tr>
<td></td>
<td>Level 4: The Amazon Rainforest</td>
</tr>
<tr>
<td></td>
<td>Level 5: The Scottish Cliffs</td>
</tr>
<tr>
<td>Grade 1</td>
<td>Level 6: A Day in Paris</td>
</tr>
<tr>
<td></td>
<td>Level 7: The African Serengeti</td>
</tr>
<tr>
<td></td>
<td>Level 8: The South Pole</td>
</tr>
<tr>
<td></td>
<td>Level 9: The Egyptian Desert</td>
</tr>
<tr>
<td>Grade 2</td>
<td>Level 10: An English Garden</td>
</tr>
<tr>
<td></td>
<td>Level 11: The Swiss Alps</td>
</tr>
<tr>
<td></td>
<td>Level 12: A Russian Circus</td>
</tr>
<tr>
<td>Grade 3</td>
<td>Level 13: The Indian Rainforest</td>
</tr>
<tr>
<td></td>
<td>Level 14: A Japanese Garden</td>
</tr>
<tr>
<td>Grade 4</td>
<td>Level 15: The Great Barrier Reef</td>
</tr>
<tr>
<td></td>
<td>Level 16: A Hawaiian Paradise</td>
</tr>
<tr>
<td>Grade 5</td>
<td>Level 17: A Southwest Fiesta</td>
</tr>
<tr>
<td></td>
<td>Level 18: The Ancient Greek Courtside</td>
</tr>
</tbody>
</table>

Published by Lexia

Units are adapted based on each student’s individual performance. Lexia has a three step instructional branching: standard, guided practice, and instruction. Lexia provides teachers a class action plan that gives educators a “to-do” list to support students. It also informs teachers which students need more usage time on the student program. The Needs Column tells how many more minutes on Core 5 that student needs in order to meet their recommended usage for this week (Monday-Sunday). This program indicates and identifies struggling students. Teachers can access a PDF lesson and they can receive additional support. Lexia also has a program section entitled “skill builder.” Skill builders are designed for students who have finished a program level and are ready for independent practice. Teachers can access the PDF worksheets and mark the
Skill Builders as delivered to remove it from the students’ list. Periodically, students receive certificates that have finished or completed program levels. Successful implementation is based on following certain criteria: a) students consistently meet weekly recommended usage; b) teachers monitor student progress and plan instruction based on students’ needs; and c) students receive targeted instruction with Lexia Lessons and practice opportunities with Lexia Skill Builders.

**Targeted Instructional Materials:**

<table>
<thead>
<tr>
<th>Description</th>
<th>Lexia Lessons</th>
<th>Skill Builders</th>
<th>Lexia Connections</th>
<th>Supplemental Comprehension Lessons</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>Scripted, explicit instruction for targeted intervention</td>
<td>Practice worksheets for application and generalization of skills</td>
<td>Activity suggestions for introduction, reinforcement, or extension of a skill</td>
<td>Scripted instruction to enhance reading comprehension</td>
</tr>
<tr>
<td><strong>Student Experience</strong></td>
<td>All instructional materials offer multi-sensory activities that reinforce and extend online learning and provide opportunities for oral expression, writing, and collaboration.</td>
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<td>All instructional materials offer multi-sensory activities that reinforce and extend online learning and provide opportunities for oral expression, writing, and collaboration.</td>
<td></td>
</tr>
<tr>
<td><strong>Scope</strong></td>
<td>161 lessons</td>
<td>431 pages</td>
<td>144 pages</td>
<td>35 lessons</td>
</tr>
<tr>
<td><strong>Delivery</strong></td>
<td>Teacher-led</td>
<td>Primarily independent with opportunities for peer collaboration</td>
<td>Teacher-mediated with opportunities for peer collaboration</td>
<td>Teacher-led</td>
</tr>
<tr>
<td><strong>Grouping</strong></td>
<td>Individual</td>
<td>Individual</td>
<td>Individual</td>
<td>Individual</td>
</tr>
<tr>
<td></td>
<td>Small group</td>
<td>Peer or adult partner</td>
<td>Small group</td>
<td>Small Group</td>
</tr>
<tr>
<td></td>
<td>Whole Class</td>
<td>partner</td>
<td>Whole class</td>
<td>Whole class</td>
</tr>
<tr>
<td><strong>Focus</strong></td>
<td>Students who are struggling with a skill in an online activity</td>
<td>Students who have completed an online activity</td>
<td>All students to supplement instruction</td>
<td>All students to supplement instruction</td>
</tr>
</tbody>
</table>

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Lexia also recommends various implementation models which include: a) classroom (center rotations); b) computer lab; c) intervention block/special education; d) before and after school; and e) home usage. Lexia recommends using a combination of these implementation models to maximize student gains.

In an interview, Lexia representative conveyed that school districts purchase a license and along with the license, they receive a supporting package, webinar, and three calls for schools. Lexia also monitors all school districts and conducts research annually. Based in Florida, Lexia has a research team of twenty to twenty five people.

Teachers are offered a webinar and professional development for support. Lexia also offers to meet with teachers and review the data. Teachers are encouraged to give feedback year round, and they have direct access to the advisory board to give feedback.

Historically, Lexia, an adaptive program, is a component of Rosetta Stone. The directions are given in the child’s native language. Therefore, Lexia is familiar with the needs of English Language Learners. How does it make its programs compatible for other learners? Lexia addresses or accommodates gifted learners.
because it is and an accelerated program. Students can work at their own pace and therefore, Lexia remediates and challenges students simultaneously. Lexia addresses balanced literacy. This program gives students what they need and it aligns with RTI (Response to intervention). For students, there are three levels of instruction to attain. Lexia does not track students, and there is no prescribed number of lessons. Students never have to wait until the lessons are not repetitive. This is one of the components that make Lexia so successful. Is Lexia more successful with male or female students? Lexia is centered on engagement and the self determination theory. Lexia is universally self engaging.

Lexia has been in nine peer reviewed journals, and every year, the program is revised based on teacher feedback. Currently, Lexia is the largest PreK initiative in the state of South Carolina. Lexia has also been adopted in thirty eight schools in Chesterfield County (Virginia), Utah, Kansas, and SC (all of Horry and Charlestown Counties) Currently, there is a special initiative in Richland County, and Lexia hopes to have a district level adoption. (J. Priest, personal communication, Nov. 27, 2017)

According to Ness, Couperus, and Willey, (2013), this study evaluated the efficacy of the Lexia Reading program with a cohort of 37 students in a primary school. Students were randomly assigned to experimental and control groups. The study concluded that the program’s base and efficacy is equivocal. This study was a small study limited to a single school. In the final analysis, two programs are beneficial for the learner in Lexia: computer time and direct teaching time. Teachers are provided a way to provide students with targeted one to one instruction in specific skills areas that are key to literacy development. In conclusion, this individualized instruction ensures that any limitations of the program are ameliorated (Ness, Couperus, and Willey, 2013).

According to the U.S. Department of Education, three studies were conducted that included 314 students in kindergarten and first grade in two states. The data reflected that Lexia Reading had potentially positive effects on alphabetics, no discernible effects on fluency, potentially positive effects on comprehension, and no discernible effects on general reading achievement. (U.S. Department of Education, 2009)

**Purpose of the Study:**

The purpose of this study was to identity effective characteristics of the Lexia reading program. Moreover, the purpose is to compare the critical components between the various aspects of literacy as they relate to kindergarten students. The research focused on student growth and remediation in literacy. In observing the data, several elements were noted that promoted student success and growth. Survey data was used to address the research questions posed in this study. This study addressed the commonly omitted question, “What are teacher concerns about other remediation and enrichment reading software compared to Lexia?” To investigate this question in great depth, researchers posed the following questions:

Are students adequately remediated and challenged by technology based literacy programs such as: Lexia?

What are the demographics of students who participate? What do other reading assessments reveal about these students’ achievement and progress?

**Participants:**

For this investigation, researchers gathered data from participants’ scores and input on the Lexia program. The participants represented various ability and cognitive levels. The charts included below give a description of the participants, demographics, grade level of material, instructional priorities, and specified students’ growth.
Located in an affluent district, Elementary A has less than five hundred students (335 in 2016), and about two teachers per grade level. Recently, there have been a few shifts in administration and high teacher turnover. In 2016, Elementary A had a principal for sixteen years. Since her retirement, there have been two other administrators. Approximately ninety-four percent of the student body participates in Medicaid, SNAP, or TANF, homeless, foster, or migrant. Eleven percent of students have disabilities while only four percent are gifted and talented. Two percent are retained.

Over half of the faculty has advanced degrees and fifty percent are on continuing contracts. Students and teachers have a high attendance rate. Even though Elementary A serves a poor rural community, the district is affluent and diverse. It has many resources and extensive professional development opportunities for faculty and staff.

Within this study, the authors focused primarily on two students from one of the kindergarten classes. The class has eighteen students; only one student in the class has been retained. It is his second year in kindergarten; in addition, he is a special education student that receives pull out instruction daily for forty-five minutes. The demographics of the class are explained later in the article. Please note that out of the eighteen students only four enrolled in PreK. For many of the students, this is their first experience in school.

In the chart below, it shows the students’ (Student A and Student B) attendance, discipline referrals, first and second quarter progress report scores, first and second quarter report card grades, KRA (kindergarten readiness assessments), Fountas and Pinnell BAS’ scores, and the Reading Inventory (RMI). This information gives a broad overview of the students’ academic achievement levels. Does the information compliment or contradict each other?

**Data for Elementary A Kindergarten Students:**

<table>
<thead>
<tr>
<th>Student</th>
<th>No. of Tardies</th>
<th>No. of Absences</th>
<th>ABE Referrals</th>
<th>1st quarter ELA interim</th>
<th>2nd quarter ELA Interim</th>
<th>3rd quarter ELA</th>
<th>KRA Language</th>
<th>KRA Overall Score Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>259</td>
</tr>
<tr>
<td>B</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>247</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Student</th>
<th>Independent reading level</th>
<th>Instructional Level</th>
<th>Accuracy rate</th>
<th>Fluency</th>
<th>Writing</th>
<th>Hard BAS Level</th>
<th>RI Foundations</th>
<th>RI Comprehension</th>
<th>SC</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Pre-A</td>
<td>Pre-A</td>
<td>Below 90%</td>
<td>0</td>
<td>2</td>
<td>B</td>
<td>12</td>
<td>N/A</td>
<td>0</td>
</tr>
<tr>
<td>B</td>
<td>Pre-A</td>
<td>Pre-A</td>
<td>Below 90%</td>
<td>0</td>
<td>0</td>
<td>A</td>
<td>3 refused</td>
<td>N/A</td>
<td>0</td>
</tr>
</tbody>
</table>

Student A has satisfactory attendance, and his progress reports and report cards have low inconsistent scores of 2’s. With Fountas and Pinnell, his reading instructional and independent levels are low (Pre-A). His accuracy rate was below 90%. His writing indicated limited understanding of the text. His RI (reading inventory) he scored at a low level for kindergarten. The high score is between 32-35. Please note these tests
many of the same skills that Lexia focuses on. Even though Student A has no office referrals, the teacher indicated that the administration was non-supportive so it was not effective or beneficial to submit office referrals. Student A has a 68% positive rate points on Class Dojo. A chart that shows the number of happy, okay and sad faces he has earned for the year has been included in the appendices. The month of November and perhaps certain other dates are missing due to missing charts. The student did not always return the behavior chart. It is the teacher’s belief that if the student had better behavior and focused more it would positively impact his progress.

On the other hand, Student B refused to complete certain assessments. She scored 3 on the reading inventory test and on Fountas and Pinnell reading assessment; she is below 90% accuracy level. She will read Pre-A books. This is similar to Lexia in that she was on the Prekindergarten level until very recently. Student B’s behavior is 75% positive on Class Dojo. A chart that shows the number of happy, okay and sad faces she has earned for the year has been included in the appendices. The month of December and some other dates are missing because the student refused to bring the paper back to class. It is the teacher’s belief that if the student had better behavior and focused more it would positively impact her progress. It is the opinion of the authors that the tests complement each other and support the Lexia score levels for both students.

Data Preparation and Analysis:

Of the total number respondents, ten are female and eight are male. The majority of students were African American or Caucasian. Most were enrolled in a PreK program prior to matriculation into Kindergarten. Students’ ages range from five to six years old. The school in which these students are enrolled is rural. However, the school district is affluent and many resources are available to teachers and to students. Within this particular school, there are two kindergarten classes and one PreK class.

Participants’ Gender:
Participants’ Gender and Grade Level of Material
Nov. 29, 2017

Instructional Priorities for Students
Nov. 29, 2017
Dr. Felicia Sawyer et al. The Impact of Lexia Reading Program on Early Childhood Literacy: A Case Study of Kindergarten Students

Progress for Student A
Oct. 2-Dec. 14, 2017

Level Status for Student A
Oct. 2-Dec. 14, 2017

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doi: https://doi.org/10.15520/ijcrr/2018/9/02/431
Progress for Student B
Oct. 2-Jan. 27, 2018

Level Status for Student B
Oct. 2-Jan. 26, 2018

Instructional Priorities for Students
Jan. 28, 2018
Participants’ Gender and Grade Level of Material

Jan. 28, 2018
Findings:

Based on all the data, the results suggest that remediation and specified repetition improved student progress and achievement in literacy. Since December 2017, four students have moved to first grade level: TH, NN, MM, and AM. Also, students who were on the PreK level in October 2017 have moved to K level; these students are as follows: DB, JJ, LG, and DM. One student AL (Student B) remains in the PreK level, but this is primarily due to behavior and the refusal to complete or to participate in the Lexia program at a consistent level.

In October 2017, DB (Student A) scored at level P1. By November 13, 2017, he was on level P2. Dec. 7, DB (Student A) was on Kindergarten level. To progress to first grade, he must successfully complete two more levels in the Kindergarten level. At this point, he is at 37% and he has completed 23 out of 62 units. Some of the units that he is focusing on now include: a) blending one syllable words with 1-3 sounds, b) letter to picture matching, c) advanced descriptors (vocabulary), d) sight words and picturing stories. From November 13, 2017 to December 7, 2017, he focused on units focusing on beginning sounds, blending and segmenting, picturing stories, letter names and spatial concepts. At the beginning of the year, his scripted program included focus on letter matching, rhyming, categorizing pictures, and nursery rhymes from October 2, 2017 to November 13, 2017.

With blending and segmenting, student DB (Student A) scored at 50% and 44% with consonant discrimination (letters B/P). In sight words, he is at 11% and 50% with advanced descriptors. Overall, his accuracy levels are low, but he is progressing quickly from PreK to K levels now. Note within each section, DB (Student A) receives a combination of direct instruction, guided practice and standard instruction. The program also reveals what types of errors that the students make in addition to his work rate and accuracy levels. DB (Student A) is at a medium instructional priority level.

In comparing the students’ progress in the grade level of materials, on level one, males and females remained at the same level. Level Two had more females, and it remained the same in January 2018. Level Three had more females in November 2017 and January 2018. Level Four had more males, and there were no changes in January 2018. Level Five had more females in November 2017 and there were no changes in January 2018. Level Six had more females in November 2017; however, in January 2018, there were more males. Level Seven has only one male. (Graph: Grade Level of Materials for November 2017 and January 2018)

Instructional priorities vary throughout the year. However, in comparison to November 2017, January had more instructional areas noted as priorities. As in November 2017, beginning sounds and spatial concepts remained a priority. However, most students in January 2018, they are rated at the high level. In November 2017, more students were rated as medium. In January 2018, the following areas were added: rhyming, blending syllables, letter names, medial vowels, picture details, sight words, sounds to letters, and beginning consonant sounds.

In October 2017, AL (Student B) scored at level PK1. By November 13, 2017, she was on level PK1. Jan. 23, AL (Student B) finally moved on to Kindergarten level. Her behavior and refusal to complete work was the primary reason why it took her so long to achieve. All the other three students who were at PreK at the beginning of the year had progressed to Kindergarten level in Lexia before Christmas 2017. To progress to first grade, she must successfully complete fifty-two more units in the Kindergarten level. At this point, she has completed only two out of fifty-four units. Some of the units that she is focusing on now include: a) blending and segmenting, b) picturing stories, c) beginning sounds, d) letter names and e) spatial concepts. From November 13, 2017 to December 7, 2017, she focused on units focusing on beginning sounds.
Dr. Felicia Sawyer et al. The Impact of Lexia Reading Program on Early Childhood Literacy: A Case Study of Kindergarten Students

blending and segmenting, picturing stories, letter names and spatial concepts. At the beginning of the year, her scripted program included focus on letter matching, rhyming, categorizing pictures, and nursery rhymes from October 2, 2017 to November 13, 2017.

With rhyming, student AL (Student B) scored at a low percentage. It took sixty nine attempts for her to complete this lesson. Student B struggled in the following areas in January 2018: blending and segmenting, beginning sounds, letter names, picturing stories, and spatial concepts. From October 2017 to December 2017, she completed forty two units; however, she was still rated as low in the following areas: rhyming, letter matching, categorizing pictures, and nursery rhymes.

Overall, her accuracy levels are low, and she progressed slowly from PreK to K levels. Note within each section, AL (Student B) receives a combination of direct instruction, guided practice and standard instruction. The program also reveals what types of errors that the students make in addition to her work rate and accuracy levels. AL (Student B) is a high risk in the instructional priority level.

**Conclusion:**

It may be beneficial to have more supervision over students who are in lower groups on Lexia to ensure student concentration and substantial progress.

Student A was a struggling reader, and his progress was substantial between October and December 2017. He moved from PreK to K level in less than three months. The strategies in the Lexia program have proven effective. Students buy into the program and they are motivated by the awards.

It may be beneficial if teachers had assistance in implementing the scripted lessons for students on a consistent basis.

Student achievement may have increased more if teachers had assistance and used the scripted lessons for reinforcement on a more consistent basis. Lexia scores were in congruence with other assessments.

**Implications and recommendations**

The implications of this study are clear. One on one instruction is an effective way of supporting literacy development. Scripted lessons can be very beneficial if delivered on a consistent basis. It would be beneficial for other personnel to assist teachers in the delivery of scripted lessons one on one with students.

**Recommendations:**

In order to have more effective computerized reading programs, the consistency of reading programs is essential. Across the country, schools should have the same or equivalent length of time for reading on Lexia; moreover, teachers should have the opportunity and the assistance needed to deliver the individual scripted lessons to individual students as recommended by Lexia.

Other supports, with counseling and positive behavior reinforcement, are essential for student achievement, progress, and success.

**Limitations:**

Although this study is pertinent for gauging issues of programmatic structure, the study did not account for other variables (e.g. larger populations at elementary schools in other regions). Among the many possible directions for future study of computerized reading programs such as: the need for additional studies about Lexia on a larger scale studies to determine the trends discovered here are consistent among this population at large. Once a larger representation is created, additional studies of the many veins of this singular study can be aptly employed.

doi: [https://doi.org/10.15520/ijcrr/2018/9/02/431](https://doi.org/10.15520/ijcrr/2018/9/02/431)
Also, it would have been beneficial to analyze the data of the other kindergarten teacher and the first grade teachers.

Appendices:

Appendix A: Interview Questions with Lexia Personnel, J. Priest

How many years has the Lexia program been implemented in the U.S. schools?
In which locations of the U.S. is Lexia most popular?
What changes have been added to the program over the years? Have you added component for vocabulary, for example, in the last 3 years?
How do you ensure that multicultural literature is included in your program?
Is it more successful with elementary boys or elementary girls?
What are the differences between elementary, middle and high schools in regards to success rates?
What professional development do you provide for teachers?
In which countries, other than the U.S., has the Lexia Program been implemented?
Which component of your program has impacted student achievement the most? (for example, phonemic awareness, vocabulary, fluency etc.) Which component has seen the most gain?
What professional development do you provide for administrators?
In my research, I have not seen many articles about Lexia? Do you have a research team that promotes Lexia among schools?
How do you accommodate special needs students, gifted, English as a Second Language, hearing impaired, or vision impaired students?

Appendix B: Behavior Charts for Students A and B

Student A Behavior Chart from August –December 2017
Student B Behavior Chart from August to December 2017

References: