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READy (Reading, Enrichment, Achievement, Discovery) Explorers' Camp: A Collaborative Summer Intervention to Strengthen Literacy and Academic Engagement in Elementary Students

Dr. Christy L. Thomas

Dr. Kimberly Smith-Burton

Dr. Jocelyn Smith

Ms. Tiffany Quick

Fayetteville State University
Department of Early Childhood, Elementary, Middle Grades, Reading, and Special Education
Fayetteville State University, 1200 Murchison Road, Fayetteville, NC 28301.
United States of America

Abstract

The READy (Reading, Enrichment, Achievement, Discovery) Explorers' Camp was a two-week, grant-funded summer intervention program designed to address pandemic-related learning loss among rising 4th through 6th grade students. Held at Fayetteville State University from June 17–28, 2024, the camp offered integrated literacy and math instruction through culturally responsive, project-based learning (PBL) strategies. The program served 38 students at no cost, each supported in low-ratio classrooms led by trained educators. Instruction incorporated evidence-based practices, the PIE (Persuade, Inform, Entertain) framework, and digital learning platforms such as Flocabulary and 10story Learning to support student engagement, vocabulary development, and academic reasoning.

The instructional design focused on real-world applications to promote learning transfer and confidence. Students participated in interdisciplinary projects such as designing fictional pet stores or original math games, culminating in performance tasks like persuasive video commercials. Daily schedules included social-emotional learning (SEL), shared meals, and structured instructional blocks to reinforce community-building and holistic support. Pre- and post-assessments were administered to measure academic growth in both reading and math. Results demonstrated significant gains, particularly among students with lower baseline scores. For example, rising 4th graders improved their math scores by over 120%, while older students showed notable increases in reading comprehension and persuasive writing skills.

In addition to academic progress, qualitative observations revealed increased student motivation, collaboration, and confidence. Teachers noted stronger communication and critical thinking skills as students engaged in team-based learning and presented their work publicly. The camp's intentional integration of SEL, culturally relevant content, and differentiated instruction fostered a joyful and inclusive environment that encouraged risk-taking and resilience. These findings align with current literature supporting integrated instruction and summer learning as key tools in closing achievement gaps.

The READy Explorers' Camp offers a replicable model for whole-child education that can be scaled through continued grant support and school-university partnerships. This research underscores the importance of blending literacy and numeracy instruction with social-emotional learning, creative expression, and student-centered pedagogy in out-of-school learning environments. As educators continue to address academic disparities exacerbated by the pandemic, programs like READy Explorers' Camp provide a promising blueprint for accelerating learning recovery and cultivating lifelong academic confidence.

Keywords: Project-Based Learning (PBL), Summer Learning Loss, Social-Emotional Learning (SEL), Flocabulary, 10story Learning

Introduction

The COVID-19 pandemic exacerbated educational inequities and disrupted academic progress, particularly in literacy and math. In response, the READy (Reading, Enrichment, Achievement, Discovery) Explorers' Camp was developed as a summer intervention to support students in building foundational academic skills while reengaging them in joyful, collaborative learning. The camp targeted rising 4th through 6th graders who demonstrated academic need and were at risk of summer learning loss. Hosted at Fayetteville State University and supported by the NC Collaboratory Grant and the FSU Reading Clinic, the camp emphasized culturally responsive instruction and whole-child development.

Purpose of the Study

The purpose of this study was to evaluate the effectiveness of the READy Explorers' Camp, a two-week, grant-funded summer program designed to address learning loss in literacy and mathematics for rising 4th–6th grade students. Specifically, the study aimed to examine the impact of integrated, project-based instruction supported by digital tools such as 10story Learning and Flocabulary. The evaluation focused on three key objectives: improving academic performance and reading comprehension, enhancing student engagement and attitudes toward learning, and addressing pandemic-related learning loss. Pre- and post-camp assessments and student survey data were analyzed to determine progress toward these goals.

Project Objectives and Research Questions

To guide the evaluation of the READy Explorers' Camp, the following project objectives and research questions were developed. These objectives are directly aligned with the camp's mission to improve student outcomes in literacy and mathematics, foster positive attitudes toward learning, and address pandemic-related learning loss through evidence-based instruction.

Project Objectives

1. **Enhance Reading Proficiency and Academic Performance:**
   Improve average reading test scores by 15% and increase reading comprehension accuracy by 10% through the use of evidence-based instructional strategies. This goal targets students in Grades 3–5 and is evaluated through pre- and post-assessments administered within one week of camp completion.
2. **Improve Student Attitudes and Engagement**
   Increase student enjoyment and motivation for reading and learning, aiming for a 20% increase in positive responses on post-camp surveys compared to pre-camp data. Engagement will be supported through integrated educational tools and a daily meal program, with surveys analyzed within two weeks of the camp's conclusion.
3. **Address COVID-19 Pandemic Learning Losses:**
   Mitigate academic setbacks due to the COVID-19 pandemic by achieving a 15% improvement in students' standardized test scores and academic language usage. Intensive, focused instruction will support this goal, with outcomes evaluated within one month post-camp through comparative analysis of academic records and assessments.

Research Questions

1. **What is the impact of the READy Explorers' Camp on students' reading proficiency and academic performance across core subjects such as math, science, and social studies?**
   Measurement: A 15% improvement in standardized reading test scores and a 10% increase in reading comprehension accuracy will be targeted, along with performance tracking in core subjects. Data will be collected pre- and post-camp and analyzed within one week.
2. **To what extent does participation in the READy Explorers' Camp enhance students' attitudes toward reading and learning and how do educational tools and meal programs contribute to this engagement?**
   Measurement: A 20% increase in positive survey responses will be used to evaluate student attitudes and engagement. Survey analysis will occur within two weeks after the camp.

3. **How effective is the camp in reducing COVID-19-related learning losses, particularly in reading and academic language development?**

   Measurement: A targeted 15% improvement in standardized test scores and academic language application will be evaluated through a comparison of student performance data collected before and after the camp.

Literature Review

In the pursuit of educational equity and academic growth, many school systems are turning to high-impact strategies that address learning loss and promote cross-disciplinary learning. Research supports the implementation of summer camps, collaborative learning, reading and math integration, project-based learning (PBL), and digital tools like Flocabulary as effective interventions for improving K–12 student outcomes.

Combating Summer Learning Loss Through Enrichment Programming

Summer learning loss, particularly in mathematics, continues to disproportionately affect students from low-income backgrounds. Gierczyk and Hornby (2023) describe this phenomenon as a persistent academic regression that widens achievement gaps when students are not exposed to structured learning environments during extended school breaks. They argue that the post-pandemic climate has exacerbated this issue, making it even more urgent to offer summer remediation programs.

Pitcock (2018) emphasizes the importance of leveraging summer as a critical time to support both students and families through learning programs that blend academics with enrichment. These programs not only halt learning loss but also accelerate student growth when designed intentionally. Walsh (2022) supports this claim, presenting evidence from multiple studies showing the effectiveness of summer math programs in improving student outcomes – particularly when instruction is targeted, culturally responsive, and personalized.

The benefits of these summer initiatives extend beyond academics. Hall et al. (2025) found that when summer programming integrates structured literacy practices, there is a measurable improvement in math problem-solving and fluency. Their research reinforces the need for interdisciplinary approaches and suggests that time outside the traditional school year should be optimized for integrated instruction.

Collaborative Learning and Social-Emotional Development in Mathematics

A shift from passive learning to active, student-centered instruction is also evident in the literature. Collaborative learning environments, particularly those rooted in project-based frameworks, enhance not only academic understanding but also students' social-emotional competencies. Lee (2022) explores how project-based mathematics instruction can promote collaboration, communication, and resilience—skills essential to success in both school and life.

Further reinforcing this view, Lin et al. (2025) conducted a study on fourth-grade students engaged in personalized PBL and found that those exposed to hands-on, team-oriented projects showed greater academic improvement compared to their peers in traditional settings. Their findings highlight the critical role of student agency and collaboration in mastering complex mathematical concepts.

Project-based and collaborative learning also increase student motivation. When students see the relevance of math through real-world applications, they are more likely to engage deeply with the content. This approach aligns with culturally responsive teaching practices and helps bridge opportunity gaps, especially in underrepresented communities.

The Interconnection Between Reading and Math Competency

A growing body of research demonstrates that literacy and numeracy skills are not isolated domains but are instead deeply interconnected. The ability to comprehend and analyze text is fundamental to solving mathematical word problems. Vilenius-Tuohimaa, Aunola, and Nurmi (2008) found a strong correlation between reading comprehension and students' success in mathematical problem-solving, suggesting that instruction in one area reinforces skills in the other.

Hall et al. (2025) confirmed that interventions targeting reading fluency also enhanced students' math fluency, especially in problem-solving contexts. They argued that decoding and vocabulary knowledge play a role in students' ability to process and solve complex math problems. Hadianto et al. (2021) echoed this sentiment, concluding that reading competence is a determining factor in students' ability to interpret and work through math word problems effectively.

These findings advocate for an integrated instructional model where math and reading support each other. Teachers who embed comprehension strategies into math lessons—such as close reading, annotation, and vocabulary study—help students develop transferable skills that enhance both disciplines.

Leveraging Flocabulary for Vocabulary Development and Engagement

Digital tools that promote academic language acquisition are gaining traction as schools seek engaging ways to improve student comprehension. Flocabulary, a multimedia platform that uses rhythm and music to teach academic vocabulary, is one such tool. According to PR Newswire (2023), Flocabulary's latest analytics features offer teachers valuable insights into student progress, allowing for data-informed instruction and personalized support.

Flocabulary's emphasis on culturally relevant content and active learning makes it particularly well-suited for diverse classrooms. The platform supports vocabulary acquisition across subjects, including ELA, math, science, and social studies, enabling students to retain complex terms through rhyme, music, and repetition. As students build academic language fluency, they become better equipped to understand both narrative and expository texts, as well as word-based math problems.

Moreover, Flocabulary enhances student motivation and engagement—critical factors in academic success. By merging entertainment with instruction, it reaches students who may otherwise disengage in traditional learning environments. When incorporated into summer learning, collaborative PBL units, or tiered literacy interventions, Flocabulary acts as a bridge between foundational skills and rigorous academic content.

Summary

Overall, the reviewed research highlights the effectiveness of integrated instructional strategies that combine summer learning, collaborative project-based approaches, literacy-math connections, and digital tools like Flocabulary. While each intervention has demonstrated individual benefits, their combined implementation appears most promising for addressing achievement gaps, supporting social-emotional development, and fostering sustained academic growth. These findings provide a foundation for the current study and underscore the importance of designing year-round, research-based learning experiences tailored to student needs.

Methodology

This study evaluated the structure and outcomes of the READy Explorers' Summer Camp, held June 17–28, 2024, in the College of Education at Fayetteville State University (FSU). The goal of the camp was to strengthen students' reading and mathematics skills through integrated, project-based instruction. These objectives provided a framework for measuring growth in reading, academic language, and student engagement, and they guided the selection of assessment tools and data analysis methods.

The camp was led by a Director, a university-level reading professor, and a Co-Director, a university-level mathematics professor. This dual leadership ensured the integration of evidence-based strategies in both content areas and supported instructional consistency across classrooms.

Participants and Recruitment

To recruit participants, flyers were distributed to local elementary schools. Interested families completed an application and survey to help identify students who would benefit from summer learning support. A total of 50 students who had completed Grades 3–5 in the 2023–2024 academic year were selected based on academic need and interest. Of those selected, 38 students attended the camp: 18 rising fourth graders, 13 rising fifth graders, and 7 rising sixth graders. Students were grouped by grade level across five classrooms, each with two certified teachers, maintaining a low teacher-student ratio.

Camp Schedule and Instruction

The camp was held Monday through Friday, June 17–28, 2024 and followed a consistent and structured daily schedule. Each day began with a Morning Munch & Learn session from 8:00–9:00 a.m., combining breakfast with social-emotional learning (SEL) activities. A short restroom break followed from 9:00–9:10 a.m. before students engaged in math instruction from 9:10–10:30 a.m. Another break was scheduled from 10:30–10:40 a.m., followed by literacy instruction from 10:40 a.m. to 12:00 p.m. The camp day concluded with Literacy League Lunch & Dismissal from 12:00–12:30 p.m. This structure was intentionally designed to maximize academic engagement while allowing time for wellness, movement, and relationship-building throughout the day.

Instruction was rooted in evidence-based practices and integrated literacy strategies, mathematical reasoning, digital tools, and project-based learning. The PIE (Persuade, Inform, Entertain) framework served as the camp's primary literacy focus, guiding students in analyzing texts and crafting purposeful writing. These skills were applied in a culminating performance task where students created and performed commercials to promote their math games or attract customers to their fictional pet stores.

Students who had completed Grade 3 (rising 4th graders) participated in the Pet Prism project, which required them to design and manage a pet supply store using concepts such as area, perimeter, pricing, and categorization. Students who had completed Grades 4 and 5 (rising 5th and 6th graders) completed the Mega Mini Games project, where they designed original math games that incorporated fraction concepts and persuasive language. Throughout the camp, Flocabulary was used to enhance vocabulary development, comprehension, and student engagement.

Students received one-on-one attention from their teachers and worked collaboratively with peers. This instructional design supported differentiated instruction and social learning, allowing students to make meaningful academic gains while developing communication, teamwork, and critical thinking skills.

Assessment Procedures

To evaluate academic growth, students were administered pre- and post-assessments in both reading and mathematics. The same assessments were used at both times to measure improvement. The math assessments were derived from the 10story Learning curriculum and aligned to each project's grade-level content. The reading assessments were compiled from previously released and retired North Carolina End-of-Grade (EOG) test questions, ensuring alignment with state standards. Assessment data were used to inform instructional practices and evaluate program effectiveness.

Due to the small sample size and the short-term nature of the intervention, this study employed descriptive statistical methods rather than inferential analysis. Mean scores from pre- and post-assessments were compared across grade levels to evaluate academic growth. While statistical significance testing was not conducted, the observed gains – particularly among students with lower baseline performance – offer meaningful insight into the program's impact. Future studies with larger and more diverse samples may consider inferential methods to assess broader generalizability and long-term effectiveness.

Results

Results are based on a comparison of pre- and post-assessment mean scores to evaluate academic growth. No inferential statistics were conducted, and the focus was on descriptive measures of change. These results are aligned with the camp's stated objectives to improve reading proficiency, boost student engagement, and mitigate COVID-related learning gaps.

To evaluate student progress over the course of the two-week summer camp, a growth comparison model was used. Students were assessed in both mathematics and literacy using the same pre- and post-assessments. This approach allowed for a clear measurement of student gains over time. The math assessments were aligned with the 10story Learning curriculum, while the literacy assessments were compiled using previously released items from North Carolina End-of-Grade (EOG) reading comprehension exams. All assessments were scored quantitatively and averaged by grade level.

Mathematics Outcomes

Students in all three grade levels demonstrated positive academic growth in mathematics. Growth was determined by comparing average pre- and post-test scores within each grade level. The largest percentage gain occurred among Students who had completed Grade 3 (rising 4th graders), indicating that the youngest participants—who started with the lowest baseline scores—made the most significant relative improvements.

- Grade 3 (n = 18) had an average pre-test score of 27.72 and a post-test score of 61.11, showing an impressive overall growth of 120.44%. This substantial improvement suggests that the 10story-aligned Pet Prism project, which focused on foundational skills such as area, perimeter, pricing, and categorization, effectively supported math development at this level. Teachers noted increased engagement and confidence among Students who had completed Grade 3 (rising 4th graders), particularly in applying math to real-world contexts.
- Grade 4 (n = 13) showed a rise from a pre-test average of 57.69 to 71.67 post-test, resulting in 24.23% growth. These students participated in the Mega Mini Games project, which incorporated fractions, game design, and critical thinking. Though the growth percentage was lower than in Grade 3, the gains were still notable and reflect enhanced conceptual understanding.
- Grade 5 (n = 7) demonstrated growth from 62.86 to 83.33, marking a 32.56% increase. This group also worked on Mega Mini Games but with added complexity in mathematical reasoning and language integration. The higher initial scores suggest a stronger starting point, while the continued progress indicates reinforcement of higher-order math skills.

Across all grade levels, students benefited from small-group and one-on-one instructional support. Teachers incorporated project-based learning, visuals, and math discussions to deepen understanding. The increase in scores supports the effectiveness of blending hands-on, collaborative learning with explicit math instruction during out-of-school time.

Literacy Outcomes

In reading and literacy, all three grade levels also showed gains, with Grade 5 demonstrating the most growth by percentage. The literacy instruction was grounded in the PIE (Persuade, Inform, Entertain) framework, helping students identify the author's purpose in various texts and apply persuasive writing techniques.

- Grade 3 (n = 18) improved from a pre-test average of 42.94 to 47.65, yielding a 10.96% increase. While the percentage gain was more modest compared to math, this growth is meaningful given the short time frame and the developmental reading levels of younger learners. Teachers noted increased vocabulary usage, participation in group discussions, and confidence in reading aloud.
- Grade 4 (n = 13) advanced from 60.77 to 70.77, reflecting 16.46% growth. These students began to apply persuasive techniques in writing and worked with increasingly complex texts. Their culminating project involved developing scripts for commercials to promote their math games, combining academic literacy with creativity and public speaking.
- Grade 5 (n = 7) experienced the greatest literacy growth, improving from 58.57 to 77.14, an overall increase of 31.71%. This gain suggests that older students were particularly responsive to the integration of literacy with performance tasks and real-world applications. Their commercials were noted to be highly engaging, with sophisticated vocabulary and effective use of persuasive language.

Observational and Anecdotal Evidence

In addition to quantitative improvements, qualitative data collected from teacher observations and student behavior during camp supported the conclusion that students benefited from the instructional model. Teachers consistently reported that students showed increased motivation, perseverance, and a willingness to collaborate with peers. The small teacher-to-student ratio (1:4) allowed for targeted interventions, immediate feedback, and opportunities to scaffold learning appropriately.

Students responded positively to the incorporation of Flocabulary, which was used to reinforce key vocabulary and improve listening comprehension. The musical and visual elements of Flocabulary helped students retain academic language and supported differentiated instruction across all reading levels.

Moreover, the culminating performance task—a persuasive commercial—required students to synthesize both literacy and math content. Teachers noted that students took great pride in their final presentations, which not only showcased their academic skills but also their creativity, confidence, and communication abilities.

Discussion

The READy Explorers' Camp offers compelling evidence for the effectiveness of summer programs designed to meet specific academic and social-emotional objectives, including gains in reading and math performance, increased student engagement, and reduction of pandemic-related learning loss. One of the camp's defining strengths was its intentional integration of literacy and math, moving beyond rote skill drills toward meaningful application through project-based learning. The dual focus on PIE (Persuade, Inform, Entertain) writing strategies and real-world math projects fostered student engagement, comprehension, and problem-solving abilities. This integrated instructional model allowed students to see academic concepts as interconnected, not siloed, and encouraged authentic learning transfer.

The use of 10story Learning and Flocabulary enriched the curriculum with culturally relevant digital learning tools that students found both accessible and motivating. These tools helped bridge achievement gaps, particularly for students who may not thrive in traditional learning environments. The one-on-one and small group instruction, made possible by the low student-to-teacher ratio, ensured that differentiated support could be delivered consistently. This structure allowed teachers to address specific learning needs and build strong relationships that supported emotional as well as academic growth.

The growth comparison model revealed meaningful improvement in both math and literacy across all grade levels. Notably, students with the lowest baseline scores—particularly in Grade 3—showed the most significant growth, supporting the idea that summer interventions can be especially impactful for early learners when foundational skills are still being formed. In literacy, older students (Grade 5) made the greatest gains, suggesting that performance-based learning strategies such as commercial creation can significantly enhance engagement and academic expression.

The culminating presentations served as a capstone, synthesizing weeks of interdisciplinary learning. Students confidently delivered persuasive pitches that demonstrated content mastery and creative expression. These public performances also reinforced 21st-century skills such as communication, collaboration, and digital literacy. Moreover, the use of familiar frameworks like PIE and real-world contexts like managing a pet store or designing a game helped students internalize concepts and apply them flexibly.

The structure of the camp also cultivated a learning community. SEL activities, shared meals, and structured routines helped build trust and belonging. This climate, in turn, fostered risk-taking in learning, deeper participation, and joy—an element often underappreciated in academic recovery efforts. The combination of academic rigor and positive culture was a hallmark of the READy Explorers' experience.

Conclusion

In summary, the READy Explorers' Camp demonstrates that a well-designed, grant-funded summer learning initiative can yield measurable academic gains and promote whole-child development. By combining literacy and math instruction, digital tools, low teacher-student ratios, and culturally responsive practices, the camp provided an effective and engaging model for mitigating learning loss. The program successfully addressed academic gaps, promoted confidence, and cultivated a love for learning.

As educational leaders seek innovative approaches to accelerate post-pandemic learning recovery, models like READy Explorers' Camp offer a blueprint for meaningful, sustainable impact. This program not only helped students catch up; it helped them believe in their ability to succeed. Its outcomes affirm that when we blend purpose with passion and rigor with joy, every learner can thrive. Future iterations of the program may continue to refine instructional strategies in alignment with these core objectives, ensuring data-driven approaches to support student growth across multiple domains.

Recommendations and Implications

Based on the outcomes of the READy Explorers' Camp, several recommendations emerge for educators, administrators, and policymakers seeking to design or support similar summer learning initiatives. First, sustained and expanded grant-funded opportunities are critical.

The success of the camp was made possible by grant support, which allowed the program to be offered at no cost to families while providing competitive stipends to attract quality instructors. Securing ongoing funding streams is essential to replicate and scale such programs effectively.

Additionally, targeted recruitment through school partnerships proved valuable. Distributing flyers and collaborating with local schools helped identify students most in need of academic enrichment. Schools can play an integral role in recruitment, screening, and follow-up to ensure continuity of support. Furthermore, integrating evidence-based literacy and math instruction strengthened student outcomes. The camp's focus on PIE (Persuade, Inform, Entertain) writing served as a unifying framework across disciplines, while project-based learning allowed students to apply both literacy and mathematics skills in meaningful ways.

Digital tools such as Flocabulary and the 10story Learning curriculum were instrumental in enhancing student engagement and understanding. These platforms bridged academic content with students' cultural and technological realities, making learning both relevant and enjoyable. Performance-based assessments, such as the culminating student-created commercials and digital storytelling projects, enabled students to demonstrate mastery in creative, authentic formats. Incorporating similar assessment strategies into the academic year can offer valuable alternatives to traditional testing methods.

Low student-to-teacher ratios were another cornerstone of the camp's success. With two certified teachers in each classroom, individualized instruction and small-group support were consistently provided. Replicating this model should involve preserving manageable class sizes to maximize instructional impact. Finally, to ensure lasting benefits, learning must extend beyond the summer. Family engagement workshops, school-year tutoring, and continued partnerships with schools can reinforce and build upon the gains achieved during short-term programming.

The implications of the READy Explorers' Camp extend beyond seasonal intervention. The program illustrates the power of responsive instruction, intentional curriculum integration, and joyful learning environments. As educators navigate post-pandemic academic recovery, initiatives like READy Explorers' Camp offer a replicable and meaningful model for closing opportunity gaps and enriching students' educational experiences.

While the results of the READy Explorers' Camp demonstrate promising growth in both literacy and mathematics, future studies could explore the long-term academic impact of this model. Tracking student performance into the following school year could provide insight into retention and sustained progress. Additionally, comparing outcomes of students who participated in the camp with those who did not would help establish a more robust understanding of the program's effectiveness. Researchers might also examine how similar interdisciplinary, project-based summer interventions perform in different regions or with middle-grade students.

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