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More than a Babysitter: Looking Back on an Effective Summer Enrichment Program

Benterah C. Morton
University of South Alabama

Kelly O. Byrd
University of South Alabama

Elizabeth Allison
Western Governors University

André M. Green
University of South Alabama

Abstract: Each summer families across the globe send their children to summer camps and daycares for what amounts to babysitting. This study takes the discussion beyond babysitting and explores a unique summer enrichment program offered to rising second through fifth grade students in a modified enrichment camp model. During the four-week program, students were engaged in standards-based academic instruction in reading, mathematics, and science designed to provide enrichment activities to better prepare them for academic success in the upcoming year. Students were pre-tested over standards from the first quarter of the upcoming year. Then, they were taught the standards and post-tested. Analysis of the pretest and posttest data suggests that the program was successful in increasing students' content knowledge in each of the subject areas taught. The findings imply that summer programs intentionally offering standards-based academics in an enrichment camp environment can be used to provide learning opportunities that diminish academic opportunity gaps.

Keywords: *summer enrichment programs, standards-based instruction, academic opportunity gaps*

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Introduction

During the summer of 2018, a summer enrichment program (SEP) for local elementary school students was initiated to better prepare the students for academic success in the upcoming year. Developed within a partnership of a local university's College of Education and Professional Studies, one local school district, and the local 100 Black Men organization, the four-week enrichment program focused on providing accelerated instruction for students from socioeconomically disadvantaged areas. Funded as a joint venture among the partners, this program was offered at no cost to students enrolled in Title I schools. In contrast to traditional summer school or summer camp opportunities, the SEP did not seek to remediate students, but rather provide a strong foundation and preview of the upcoming school year through enrichment. Enrichment, rather than remediation, challenges students to engage in experiences beyond traditional classroom contexts (Hodges et.al., 2017; Miller & Gentry, 2010). The program was designed to engage students in meaningful, real-world, learning experiences to best prepare them for success with the upcoming year's first quarter reading, mathematics, and science content while also supporting the development of physical and social-emotional skills.

The purpose of this study was to examine the impact of participation in the SEP on student achievement gains in core subject areas. The following research question guided the study: What was the impact of participation in the SEP on students' content knowledge in reading, mathematics, and science? The impact of the program on students' content knowledge was evaluated using a pretest and posttest design, which allowed for a focused analysis of content knowledge attainment.

Before delving into the literature review, we believe it is necessary to provide the rationale behind the development of the reading and STEM-focused (science, technology, engineering, mathematics) SEP within which this study was conducted. Providing a glance into the context here will help illuminate the theoretical and historical frameworks that underpinned the development and evaluation of the SEP and inform the ways in which the program was developed through a culturally responsive pedagogical lens (Gay, 2002, 2010, 2013). During the 2017-2018 academic school year, 60.46% of the elementary schools in the local school district, predominantly serving students of color, received a grade of C (70-79) or below – with most elementary schools receiving grades that were less than desirable (Report Card, 2018). Although it is realized that one assessment does not define a school or a student, the fact remains that many students in the region were underperforming academically in reading and mathematics compared to other students in the state and the nation. The SEP described in this study combined both traditional and enrichment summer program design methods. Uniquely, the SEP utilized preservice teachers as the workforce to accelerate the academic learning of academically underperforming second through fifth grade students in the local school district.

Literature Review

The following sections explore the literature surrounding the development of the SEP. The first focuses on identifying the role of academic opportunity gaps in student learning related to strategies utilized to accelerate learning for students who have been identified as academically behind their peers. These strategies coupled with the summer enrichment program components described provide the foundation for this study.

Academic Opportunity Gap

Achievement gap is the term frequently used by education scholars to denote the difference between standardized test score means for diverse groups of students (Darling-Hammond, 2013; Ladson-Billings, 2006; Milner, 2012). In the United States, this term most often compares the scores of White students to that of other populations of students. This racially informed, deficit-framed application in which White students are the normal population to which other students are compared, currently besmirches achievement gap research. Recent scholars have challenged and reimagined frames through which to understand the academic differences between diverse populations of students. While some scholars understand academic gaps as a function of cultural difference between teachers and students (Delpit, 1995), others see it linked to teacher practices (Milner, 2012), and still others have tried to link it to socioeconomic status (Duncan & Magnuson, 2005). Ladson-Billings (2006) re-imagined the achievement gap as the education debt and theorized solutions that provided lasting positive impacts on meeting the needs of diverse populations of students. Since then, achievement gaps have been reframed as academic opportunity gaps or gaps that are caused by the inequitable distribution of resources leading to inconsistent opportunities to access educational goals (Darling-Hammond, 2013; Milner, 2012).

A wealth of strategies and interventions have been identified and designed to help accelerate the learning of student populations academically behind their peers and shrink academic opportunity gaps. According to von Hippel and Hamrock (2019), summer enrichment programs are valuable avenues for providing additional academic opportunities for students outside of the traditional classroom. Further, diminishing these academic opportunity gaps relies on the development of educators' knowledge, skills, and attitudes of a culturally responsive pedagogy (CRP). CRP embodies the interplay between culturally responsive teaching (Gay, 2002, 2010, 2013) and culturally relevant pedagogy (Ladson-Billings, 1994, 2014). CRP provides diverse theoretical frameworks supported by empirical research toward closing academic opportunity gaps.

The greatest probability of changing the negative educational trends that plague many students of color and students from communities of low socioeconomic status rests within the school environment and will require an innovative plan of action (Bailey & Paisley, 2004; Orrock & Clark, 2018). If these children are to have a chance to survive, interventions must take place *early and often* within their educational careers (Davis, 2003; Dumas & Nelson, 2016). At the current pace, they are falling further behind each year. If this trend continues, the anticipated outcome will impact the ability of these groups of children to compete within a global economy that requires a skilled and well-educated workforce. If children from these communities are to have a chance at a future, then more resources must be invested in them. Equitable investments in education not only benefit students but the communities in which they live and society in general. However, previously used funding models based on the equal distribution of resources have proven not to be equitable (Ladson-Billings, 2006). Thankfully, when distributed equitably, funding can be used to fund summer education programs that provide some remedy to academic opportunity gaps (von Hippel & Hamrock, 2019).

Summer Enrichment Programs

Summer education programs – including traditional summer school, summer enrichment camps, and summer enrichment programs – offer content-specific topics and activities that closely align with content standards taught in local schools. Traditional summer schools, for

example, often provide the student with remediation support in specific content areas. Summer enrichment camps and programs, however, seek to extend and augment student learning. Where summer enrichment camps do have connections to curricular themes (Henderson, 2018), these connections are intentionally more tenacious in summer enrichment programs (Kaul et al., 2016). Regardless of the content focus, the goal becomes to provide additional academic opportunities for the students attending the program. Variations in summer enrichment program designs are as diverse as the number of summer programs offered each year. Using a strengths-based approach, some summer enrichment programs are designed to strengthen participants' skills in order to provide a head start on learning the content taught. The difference in these programs then shows up in their individual design and target audience. According to Hodges et al. (2017), student outcomes are positively impacted by providing engaging and challenging student experiences throughout the program. These experiences, including the integration of STEM learning opportunities, engage and challenge the students to make real-life connections increasing their understanding of the content (Ihrig et al., 2018). Additionally, hiring the right human resources (teachers), and intentionally preparing them for the target population, leads to greater student gains and a decrease in the academic opportunity gap (Kim et al., 2017).

Methodology

The purpose of this study was to examine the impact of participation in the SEP on student achievement gains in core subject areas. The following research question guided the study: What was the impact of participation in the SEP on students' content knowledge in reading, mathematics, and science? A repeated measures pretest and posttest design was used to address the research question.

Context of the Study

The purpose of the SEP program was to provide rising second through fifth grade students with a preview of reading, mathematics, and science content from the first quarter of the upcoming academic school year, giving them a solid base on which to build their knowledge and understanding of the content. The SEP described in this study was initially advertised as a summer enrichment camp hoping to reap the benefits of summer camp and traditional school at the same time. However, the developers, all K-12 focused educators, designed a program more in line with traditional schools, accented with camp-like activities and field trips. The SEP offered a unique and innovative day-camp-like experience that emphasized academic achievement, character development, community partnerships, and connections for students from socioeconomically disadvantaged environments. In contrast to traditional summer school, the SEP did not seek to remediate students, but rather provide a strong foundation and preview of the upcoming school year.

The SEP, held on a local elementary school campus, was made available – at no cost – for students enrolled in Title I schools across a large school district in the southeastern region of the United States. Most of the students were bussed from their "home school" each day to mitigate travel concerns and costs for guardians. The program was offered four days a week (Monday - Thursday) from 7:30 am - 2:30 pm during the month of June. The students were placed in grade-level teams – based on the upcoming school year – and rotated daily through reading, mathematics, science, and integrated STEM content courses, as well as physical education, and character, art, and self-esteem (CASE) curricula.

The reading, mathematics, science, and integrated STEM content sessions engaged students in hands-on, inquiry-based activities focused on concepts for the students' upcoming grade level as an extension and preparation for the upcoming school year. This was done intentionally to better prepare rising second through fifth graders for future learning, rather than simply remediating previous learning, and thereby diminishing the academic opportunity gap through learning experiences outside of the traditional classroom. Using the local school district's academic pacing guides, first quarter content knowledge and skills were the focus of the activities developed within the program. The state adopted reading program, *Reading Wonders* (August & McGraw-Hill, 2014) served as the foundation for the reading curriculum. The Alabama Math, Science, and Technology Initiative (AMSTI) program served as the foundation for mathematics, science, and the integrated STEM curricula. Lessons and activities from *Investigations in Number and Space* (TERC, 2007) were used for the mathematics content and were based on the constructivist view of learning. Using concrete and pictorial representations, the student developed a conceptual understanding of the mathematics content, building procedural fluency and mathematical reasoning. For the science content, specific lessons were selected from the grade-level appropriate AMSTI curriculum, including a teacher's guide and all the supporting material for each investigation (EiE, 2011a, 2011b; Foss, 1995; STC, 2013). These kit-based units included hands-on, student-centered investigations that engaged students with the processes of science and engineering. The investigations within the integrated STEM classes were created by the university faculty and focused on the engineering design process, using that process to solve a real-world problem.

Additionally, the use of preservice teachers as primary instructors for the program allowed for a multi-dimensional learning experience not only for the students, but for the preservice teachers. In effort to assure the development of the right human resources (Kim et al., 2017) the preservice teachers were recruited from the sponsoring university the semester before the SEP was set to begin. They were assigned to content areas and grade levels in pairs, working collaboratively with mentor teachers and university faculty to plan and implement effective lessons with meaningful, engaging activities (Hodges et al., 2017). There was an average ratio of ten students to one preservice teacher in each class. The preservice teachers participated in two days of training prior to the program, as well as four additional days of professional development offered during the program. Fifteen veteran elementary teachers from the local school district served as mentors to the preservice teachers, providing them with academic and behavioral support throughout the program. Further support was provided by university faculty who created and facilitated professional development in the content areas and behavior management as well as assisted mentor teachers with curriculum development and lesson planning for each content area. Finally, an on-site leadership team of three state certified educational leaders, being mentored by instructional leadership faculty, facilitated and supervised the program.

Participants

A convenient voluntary sample was used for this study as the participants were elementary school students (entering second through fifth grade) from 30 Title 1 schools in the local school district with an average of 290 students attending each day. Participants in this study included students who completed the pretest and posttest in each content area with 99% being students of color, primarily African American. Of the participants, 99% were from families that were eligible for free or reduced-price lunch. The total number of participants (shown in Tables 1

– 4) varied for each grade level and content area due to a variety of factors discussed within the data collection and analysis.

Instruments

The instruments used in this study were developed in collaboration with university faculty and mentor teachers. Reading, mathematics, and science content knowledge was assessed at the beginning and at the completion of the program using the same pretests and posttests specific to each grade level and content area. To assess the participants' reading content knowledge and skills, grade-level assessments were adapted from the state-adopted *Reading Wonders* Curriculum (August & McGraw-Hill, 2014) to include only first quarter skills reflected in the local school district's content pacing guide. Similarly, to assess the participants' mathematical content knowledge, the *Investigations in Number and Space* (TERC, 2007) curriculum grade-level assessments were adapted to include only first quarter skills reflected in the local school district content pacing guide. The science assessments were developed in two ways. The second grade assessment was developed by an AMSTI specialist to address the selected concepts taught in the unit. The third, fourth, and fifth grade science pretests and posttests were adapted from assessments provided in the grade-level-specific curriculum (EiE, 2011a, 2011b; STC, 2013).

Data Collection and Analysis

A repeated measures research design was utilized to answer the research question, "What was the impact of participation in the SEP on students' content knowledge in reading, mathematics, and science?" Pretests were administered at the beginning of the four-week program prior to the delivery of instruction in reading, mathematics, and science. Then, the elementary preservice teachers engaged the students in appropriate and meaningful grade-level learning experiences for a total of 14 days. The posttests in each content area were then administered at the completion of the program. The posttests were administered using a staggered approach – different content on different days – so that the participants did not spend the last day of the program completing assessments in each content area. As the content area pretests and posttests were administered at different times and on different days, the number of participants within each grade level varied due to factors including late registration, late drop-offs, early pick-ups, and absences.

Using SPSS statistical software, exploratory data analysis was conducted to check for missing values or entry errors. Complete pretests and posttests scores for each grade level and content area were used to compare the growth in content knowledge and skills over the 14 days of instruction. Descriptive statistics, including measures of central tendency, were used to describe and interpret the data summarizing overall growth in the participants' content knowledge and skills for each grade level and content area. Comparisons of pretest to posttest scores changes were conducted using paired-sample (repeated measures) *t*-tests with a two-tailed 95% confidence interval.

Findings

The findings are organized by grade level and content area below. For each grade level, the sample size, descriptive statistics, differences, statistical significance, and effect size using Cohen's *d* are reported. Findings revealed overall positive changes in content knowledge for the

participants in each grade level and content area after participation in the summer enrichment program.

Second Grade Results

Table 1 shows the pretest to posttest change for the rising second grade participants across the reading, mathematics, and science tests. As can be seen in Table 1, there were statistically significant changes in performance on all the assessments. An examination of the effect sizes for the pretest to posttest change indicated that the effects were large, ranging from 1.47 to 2.00 standard deviations difference from pretest to posttest.

Table 1

Pretest and Posttest Means for Rising Second Grade Participants in Content Knowledge

Content		Pre-test	Post-test			
	N	*M (SD)*	*M (SD)*	*t*	Sig.	Effect size (Cohen's *d*)
Reading	60	51.18 (20.35)	76.15 (19.69)	11.48	$p < .001$	1.47
Mathematics	51	57.92 (18.33)	87.37 (11.25)	13.31	$p < .001$	2.00
Science	44	45.29 (17.60)	73.18 (15.62)	11.60	$p < .001$	1.74

Third Grade Results

The results for the rising third grade participants are shown in Table 2. As seen in the table, there were statistically significant differences between the pretest and posttest for all subject areas. The impact for reading and mathematics are large (over 1 standard deviation of improvement as indicated by the Cohen's *d*). However, the change from pretest to posttest in science was small (0.27 standard deviations).

Table 2

Pretest and Posttest Means for Rising Third Grade Participants in Content Knowledge

Content		Pre-test	Post-test			
	N	*M (SD)*	*M (SD)*	*t*	Sig.	Effect size (Cohen's *d*)
Reading	72	50.34 (17.92)	76.23 (15.24)	14.69	$p < .001$	1.74
Mathematics	70	40.31 (24.72)	71.78 (25.05)	11.69	$p < .001$	1.39
Science	96	35.54 (14.93)	44.98 (26.32)	3.75	$p < .001$	0.27

Fourth Grade Results

Table 3 shows the results for the rising fourth grade participants. As can be seen in the table, there were statistically significant differences between pretest and posttest scores in each

subject area. An examination of the effect sizes found the differences to be large (differences greater than 1 standard deviation between pretest and posttest). Thus, there were improvements in all the subject areas.

Table 3
Pretest and Posttest Means for Rising Fourth Grade Participants in Content Knowledge

Content		Pre-test	Post-test			
	N	*M (SD)*	*M (SD)*	*t*	Sig.	Effect size (Cohen's *d*)
Reading	59	36.33 (22.34)	63.62 (19.87)	9.34	$p < .001$	1.21
Mathematics	53	32.42 (16.51)	51.03 (22.88)	8.63	$p < .001$	1.27
Science	59	49.02 (16.04)	72.17 (17.86)	11.43	$p < .001$	1.48

Fifth Grade Results

Table 4 shows the pattern of results for the rising fifth grade participants. As can be seen there were statistically significant differences between pretest and posttest in all the subject areas. Additionally, all the pretest to posttest differences were large. Effect sizes indicated greater than one standard deviation improvement between pretest and posttest.

Table 4
Pretest and Posttest Means for Rising Fifth Grade Participants in Content Knowledge

Content		Pre-test	Post-test			
	N	*M (SD)*	*M (SD)*	*t*	Sig.	Effect size (Cohen's *d*)
Reading	70	49.21 (17.83)	79.17 (12.63)	14.20	$p < .001$	1.74
Mathematics	68	32.57 (19.02)	66.44 (20.12)	13.92	$p < .001$	1.68
Science	69	50.09 (12.72)	73.83 (16.39)	11.27	$p < .001$	1.37

Discussion

This study investigated how participation in the SEP impacted student achievement gains in reading, mathematics, and science better preparing the students for academic success in the upcoming school year. Data analyses revealed a statistically significant increase in content knowledge in each of the disciplines for each grade level, as demonstrated through pretest and posttest gains. Our discussion focuses on the overall academic progress composite gains across all levels of the program. The increase in assessment scores over such a short period of time in *each* content area of *each* grade level is quite promising. In 14 days of instruction, students experienced academic gains that could possibly carry them through the first quarter of the

upcoming school year. These findings, specifically the statistically significant increase in content knowledge across disciplines, is consistent with the findings of von Hippel and Hamrock (2019) who note that summer enrichment programs are a productive method of closing academic gaps. These gaps are closed by providing participants with opportunities to engage with academic content they otherwise may not. As noted across each content area of findings in this study, if students have enriching learning experiences over the summer (i.e., through a summer enrichment program), they will learn. The relaxed academic environment of this SEP provided multiple opportunities for students to connect new learning to personal experiences and prior knowledge. The modified design of the SEP program (academic acceleration within specific content areas seeking to extend and augment student learning accented with camp-like activities) provided a foundation for students to engage with the academic content in a less traditional summer school environment. Furthermore, embracing the format of an enrichment program – intentionally focused on meeting the needs of students from low-income areas – provided a curricular foundation that is often not the focus of enrichment camps (Hodges et al., 2017; Ihrig et al., 2018; Kim et al., 2017).

Limitations

While the program was successful in increasing students' content knowledge, as evident in the pretest and posttest results, limitations of the study have been identified related to changes in test form (von Hipple & Hamrock, 2019), assessment type (formative versus summative), and variations in the program's design (Hodges et al., 2017; Ihrig et al., 2018; Kim et al., 2017). Aligning with the research findings of von Hippel and Hamrock (2019), this study worked to illuminate issues posed by test scaling and changes in the test form. In doing so, the tests were offered within a defined period that did not require measurement scales to spread across different age groups. Further, the pretests and posttests were identical to assure that there were no changes in content across testing iterations. While this method of assessment causes concerns with internal validity (Koh & Owen, 2000), it provided the researchers with an opportunity to verify student learning over congruent assessment administrations.

The use of only summative assessments (pre and post) was also identified as a limitation of this study. Moving forward, we recommend using formative assessment data that can be collected systematically on the daily implementation of lessons through reflective-based documentation completed by the preservice teachers or mentors, or through analysis of daily student work. This would have given a more accurate representation of the gains in student achievement, as well as inform the preservice teachers of their own practices daily (NCTM, 2013). Furthermore, all pretests were administered on the first day of the SEP, leading to student fatigue and boredom. If pretests were staggered throughout the first two days of the program, this would allow students to immediately engage with student-centered lessons, rather than all-day testing.

A further limitation centers on the potential role program design and variations played in supporting the academic growth of the students served through the SEP. As noted in the methodology, the SEP designers were intentional to provide meaningful, challenging, and engaging experiences (Hodges et al., 2017) for all involved. In doing so, one key aspect was to spend time hiring and developing the right human resources (Kim et al., 2017). The preservice teachers, selected for the program by university faculty, were open to increasing their understanding of how to work with African American students who were also from low-income areas. The university faculty intentionally assigned the preservice teachers to a specific grade

level and content area based on strengths – content and pedagogy – observed in respective methods of instruction courses. However, the content and grade-level preferences of the preservice teachers were not collected or considered by the faculty prior to making these teaching assignments. While most preservice teachers were satisfied with their placements, several expressed some concern or discomfort with their grade level or content area. More consideration needs to be given to the preservice teachers' preferences and, more importantly, strengths concerning their teaching placement during the SEP and to determine if these had any impact on the achievement gains of their students.

Conclusions

The SEP program design involved the integration of STEM components (Ihrig et al., 2018) as a way of providing engaging and challenging student experiences (Hodges et al., 2017). Keeping students engaged in the daily content posed its challenges, however being able to get them out of their seats to engage in hands-on STEM activities specifically in engineering and science exploration may have aided in content retention. Further, the unique design of the SEP, including the intentional hiring and development of the teacher workforce and providing engaging and challenging student experiences through integrated STEM, added value to the student outcomes discussed in the findings (Hodges et al., 2017; Kim et al., 2017).

As school districts structure their summer school or summer camp opportunities, several innovative components of this program should be considered. First, enrichment, rather than remediation (Rollins, 2014), may be a factor in the significant academic gains in a relatively short period of time. Second, the impressive partnership between the school district, local university, and community members created a collaborative framework that benefited all parties involved. Students made academic gains, and preservice teachers gained invaluable experience. Additionally, the student data presented supports current research (von Hippel & Hamrock, 2019) that summer enrichment programs can play a role in closing academic opportunity gaps for all students attending the programs. More specifically, this study supports using summer enrichment programs to reduce academic opportunity gaps for students of color (e.g., African American), especially those who are also from socioeconomically disadvantaged areas. Simply stated, by attending the summer enrichment program, students were provided additional opportunities to learn.

After an in-depth analysis and evaluation of the SEP, future research topics emerged. While participation in the SEP was effective in achieving student success in the content modules presented during the four-week program itself, it is yet to be determined if students are indeed better prepared for their upcoming grade level. In order to thoroughly determine whether learning that occurred in the SEP was retained after the start of the school year, further evaluation of student academic knowledge must continue in the subsequent school year. Additionally, using an experimental research design, the end of quarter, district-level assessment data from those attending the SEP could be compared to those students who did not attend to determine the impact of participation in the SEP on academic achievement of first-quarter skills.

Lastly, this research opportunity focused on what was done to address the reading, mathematics, and science needs of students in the SEP. The next step of this program evaluation will consist of exploring the attitudes and experiences of preservice teachers as the participants. By engaging preservice teachers in the summer enrichment program as facilitators of classroom learning, the preservice teachers made impressive gains in culturally responsive teaching strategies and dispositions based on observations and reflections. Therefore, we expect that the

experience of implementing new culturally responsive teaching strategies will improve academic outcomes of their future K-12 students as they work to actively meet the needs of all students. While we did not anticipate the extent of this impact on students or the preservice teachers, further exploration is needed. In future studies and iterations of the SEP it would be helpful to intentionally record the culturally responsive teaching strategies and dispositions of the preservice teachers to ascertain their impacts on student academic growth.

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Author Notes

Benterah C. Morton
Leadership and Teacher Education, University of South Alabama
morton@southalabama.edu
https://orcid.org/0000-0002-8220-6138

Kelly O. Byrd
Leadership and Teacher Education, University of South Alabama
kbyrd@southalabama.edu

Elizabeth Allison
Western Governors University
Elizabeth.r.allison@gmail.com

André M. Green
Leadership and Teacher Education, University of South Alabama
green@southalabama.edu

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