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# Effectiveness of a Continuous Vs. Traditional Learning Calendar and the Impact on Reading for Students Receiving Special Education

Molly B. Dotson

*University of Nebraska at Omaha*

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EFFECTIVENESS OF A CONTINUOUS VS. TRADITIONAL LEARNING  
CALENDAR AND THE IMPACT ON READING FOR STUDENTS RECEIVING

SPECIAL EDUCATION

An Ed.S. Field Project

Presented to the

Department of Psychology

and the

Faculty of the Graduate College

University of Nebraska

In Partial Fulfillment

of the Requirements for the Degree

Specialist in Education

University of Nebraska at Omaha

By

Molly B. Dotson

May 2005

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CALENDAR AND THE IMPACT ON READING FOR STUDENTS RECEIVING  
SPECIAL EDUCATION

Molly B. Dotson, Ed.S.

University of Nebraska, 2005

Advisor: Lisa Kelly-Vance, Ph.D.

As the complexity of American society has evolved over the last several decades, the methods of educating children in a changing society have emerged as issues of debate and controversy. According to proponents of year-round education, this approach is more effective in enhancing student gains and is more conducive to the realities of the 21<sup>st</sup> century family. Opponents of school calendar reform have rebutted the previous claim by stating that there are no advantages of year-round schools when compared with nine-month schools in terms of student achievement gains. The current study investigated the effectiveness of a newly implemented year-round school. Reading gains from the spring to the fall were examined for students receiving special education in both a year-round and nine-month school. Results indicated a significant main effect for calendar type as students in the year-round school made significantly more reading gains from pretest to posttest than students in the nine-month school. However, there was not a significant main effect for curriculum nor was there a significant interaction between calendar type and curriculum. Future research would be beneficial, not only to replicate the above findings, but to provide additional information to the literature regarding the effectiveness of year-round education for students receiving special education services.

## Acknowledgements

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## Effectiveness of a Continuous vs. Traditional Learning Calendar and the Impact on Reading for Students Receiving Special Education

Education has been, and certainly will always be, a topic of heightened interest for parents, educators, politicians, and community members, who want the best for their children. The desire for optimal student learning and progress has led to continued debate regarding the efficacy of year-round education and its proposed benefits when compared with traditional education. Proponents and critics of year-round education have debated the effects of an extended summer vacation, characteristic of the traditional calendar school. Most have claimed that this interruption in the learning process has disadvantages for all students, but particularly students considered at-risk or disadvantaged (Kneese, 2000; Davies & Kerry, 1999; Cooper, Nye, Charlton, Lindsay, & Greathouse, 1996). Issues such as these concerning the effectiveness of year-round education for enhancing student academic gains have been disputed for years, and debate continues. It is pertinent for educators, parents, and community members contemplating school calendar reform to be aware of the previous and current research examining the efficiency of year-round education.

In the present paper, an examination of year-round education will be discussed, including a history of the school calendar, the definition of and approaches to year-round education, information regarding summer learning loss and retention, and arguments for both the ineffectiveness and effectiveness of year-round education. Due to the nature of the proposed study and the use of curriculum-based measurement (CBM) for determining reading gains, the development of CBM and the use of CBM for monitoring and

determining growth standards will also be addressed. Finally, the proposed study will investigate differences in reading growth for students in special education in a newly implemented year-round school and a matched traditional nine-month school. The study will provide valuable information to the school district in which the study will take place regarding the efficacy of the newly implemented continuous learning calendar.

### Literature Review

The implementation of a nine-month school year dates back to the birth of formal schooling, when such a schedule was beneficial to the needs of an agricultural society that included 85% of the American population. Children attended school for nine-months out of the year and the remaining three months were devoted to the family's livelihood (Cooper et. al., 1996). Today, a mere 3% of the population gains their livelihood through agriculture, yet the traditional nine-month school year has remained in effect (Cooper, et. al., 1996). According to the National Association of Year-Round Education (NAYRE, 2000), although year-round schools were not the norm in the past, they slowly began to emerge as an accepted approach to education in the early 20<sup>th</sup> century, with the advent of the first year-round school in Bluffton, Indiana, in 1904.

As the complexity of American society has evolved over the last several decades, the methods of educating children in a changing society have emerged as issues of debate and controversy. The effectiveness of the traditional nine-month calendar school year has been challenged for decades as alternative forms of schooling have been evidenced dating back to the early 20<sup>th</sup> century (NAYRE, 2000). Although currently year-round education is more widely accepted as an adequate alternative to traditional schooling, resistance and

controversy have plagued its past. During the early 20<sup>th</sup> century, politicians, educators, and community members opposed proposals advocating year-round education because of the widespread belief that eliminating the three-month summer break would interfere with family vacations, athletics, and extra curricular activities (Donato, 1996). Year-round school reform was based on cost and space efficiency, which were not considered problematic at that point in our history due to the financial support for education being provided by the American public. However, during the 1960's, as a result of increased enrollment and financial strains experienced by many American schools, issues of year-round education were readdressed (Donato). More recently, during the 1980's, the issue of year-round education was once again revisited due to evidence of waning test scores, increased skepticism of public education, and the recognition that the traditional agrarian school was obsolete (Gandara & Fish, 1994; Cooper, et al., 1996; Donato). Proponents of year-round education stand firm in their belief that year-round schooling is more conducive to the diverse lifestyles and employment realities that are typical of the 21<sup>st</sup> century (Davies & Kerry, 1999). Based on data from NAYRE, in 2001-02, 2,184,596 students were being educated in year-round schools across 44 states, and judging from past data, these numbers are steadily increasing (NAYRE).

### Year-Round Education

Year-round education, year-round schooling, continuous learning calendar, and balanced/modified calendar are all terms that have been used interchangeably to refer to a modified school year that incorporates continuous learning over 12 months with periodic breaks or intersessions interspersed throughout the year (Palmer & Bemis, 1999; Shields

& Oberg, 1999; NAYRE, 2000; Kneese, 2000). There are a variety of schedules that year-round schools can achieve depending on the desired frequency and duration of the intersessions. The most frequently implemented calendars include the 60-20, 45-15, and 90-30 schedules, all of which require the students to receive instruction 180 days out of the year. In the 60-20 schedule, the school year is separated into three instructional periods lasting 60 days with three, 20-day intersessions between. The 45-15 schedule offers four, 15-day intersessions interspersed among four, 45-day instructional periods. When the 90-30 schedule is implemented, students attend school over two, 90-day periods followed by two, 30-day vacations (NAYRE, 2000; Palmer & Bemis, 1999).

Models of year-round education (YRE) can be implemented as either single-track or multiple-track. Single-track YRE is the most commonly applied model as it allows the students and faculty to adhere to the same calendar or schedule. Single-track is implemented primarily to balance instructional time and maximize student learning with periodic, evenly spaced breaks. Multiple-track YRE divides the students and faculty into two groups that have opposite schedules, creating a “school within a school” atmosphere. This model of YRE was designed to be utilized in school systems facing lack of classroom space and problems of overcrowding (NAYRE, 2000; Palmer & Bemis, 1999).

The argument has been put forth that learning is a year-round process that is delayed and interrupted by the summer vacation typical of a traditional 9-month calendar school year. A report by the National Education Commission on Time and Learning entitled “Prisoners of Time,” criticized the rigid nine-month structure of the traditional American school system claiming that it fails to acknowledge a changing American

society and learning differences among the students that it serves. (National Education Commission, 1994). According to Davies and Kerry (1999), the growth of research reporting that student achievement and growth can be enhanced by calendar change is substantial and should not be ignored. Clearly, more school systems around the United States are feeling the pressure to abandon the old, traditional approach to formal schooling and move toward educational and structural reform.

### *Summer Learning Loss*

Another heavily debated topic of year-round education that appears to favor year-round schooling is the assertion that students suffer from learning loss and less retention due to elongated summer vacations. Advocates for year-round education have proposed that extended summer vacations typical of the traditional nine-month schools may result in increased forgetting and academic losses, affecting different student populations differently (Kneese, 2000; Davies & Kerry, 1999; Cooper et. al., 1996). In contrast, opponents of year-round education have claimed that frequent shorter breaks characteristic of year-round schools are harmful to student retention (Wildman, Arambula, Bryson, Bryson, Campbell, Dominguez, Flores, Jackson, Killberg, Lara, Leltlow, Pitts, Shoop, Waterman, & Watkins 1999).

Based on a meta-analytic review by Cooper, Nye, Charlton, Lindsay, and Greathouse (1996) several conclusions were drawn regarding the effects of summer on learning and retention. The authors reported that the effects of long summer vacations differentially impacted students. Summer break was most detrimental to those students who were disadvantaged academically or economically and students considered to be at-

risk. These students tended to forget more over the summer because they either spend time unsupervised, roaming the streets, or they waste time at home in unstimulating, impoverished environments (Cooper et. al., 1996; Learning, Retention, and Forgetting, 1978; Davies & Kerry, 1999). Advantaged children do not show summer learning loss to the same extent because these children continue to learn during the summer months in enriched and stimulating environments in which they are exposed to myriad experiences (Learning, Retention, and Forgetting, 1978; Cooper et. al., 1996; Davies & Kerry, 1999). According to a New York State Regents Report, advantaged students annual growth during the traditional nine-month school year is one year, three months, with an additional one-month growth over the summer months, equaling a total growth of one year, four months during the entire year. Disadvantaged students, on the other hand, gain an average of one year, one month during the nine-month school year, but lose between three to four months on average over the summer, resulting in total growth of seven to eight months (Learning, Retention, and Forgetting, 1978). Based on this information, it is clear to see that at-risk students who are already academically behind their peers, suffer substantially from the long summer vacation.

Advocates and critics of year-round education have debated its effectiveness for years, and the debate continues. Research in the area has done little to bring the two sides together on the issue, as an agreement regarding the efficacy of year-round education has not been reached. The issue concerning whether or not students experience significant learning loss over the three-month summer vacation has been the primary topic of interest and debate among researchers and educators alike. Research has added confusion

regarding a resolution as to the effects of summer on learning and retention, reporting that summer break is detrimental to some, but certainly not all students (Cooper et.al., 1996; Davies & Kerry, 1999; Wintre, 1986). Although substantial evidence for the effectiveness of year-round education has been provided, the presence of a few studies denouncing the superiority of year-round schools is a topic of interest and should not be ignored (McMillen, 2001; Merino, 1983). Due to an increase in the number of schools adopting educational reform, a review of the available research comparing the effects of year-round and traditional education on student achievement and learning retention is necessary.

#### *Effectiveness of Year-Round Education*

Though the research appears to be inconsistent concerning of the effectiveness of year-round education, many studies have reported improvements in academic performance associated with the implementation of year-round education (Shields & Oberg, 1999; Wildman et. al., 1999; Palmer & Bemis, 1999; Frazier-Gustafson, DeLong, & Jones, 2000; Davies & Kerry, 1999; Cooper et. al., 1996; Kneese, 2000; Gandara & Fish, 1994). Proponents of year-round education have cited multiple advantages of a more continuous learning calendar, including improved achievement (Shields & Oberg, 1999; Kneese, 2000; Palmer & Bemis, 1999; Frazier-Gustafson, DeLong, & Jones, 2000), enhanced motivational levels of students and teachers after frequent breaks (Shields & Oberg, 1999; Palmer & Bemis, 1999; Gandara & Fish, 1994), and increased opportunities during intersessions to provide enrichment activities (North Carolina State Board of Education, 2000; McMillen, 2001; Palmer & Bemis, 1999; Learning, Retention,

& Forgetting, 1978; Gandara & Fish, 1994). School districts that are contemplating the implementation of year-round education, or further, schools that have recently implemented year-round education calendars should be aware and knowledgeable about the myriad research that has indicated that year-round education is equal to or greater than traditional calendars in terms of student academic achievement and growth.

Shields and Oberg (1999) conducted a study to determine whether year-round education was associated with academic improvement. Yearly, the State Office of Education publicly announces the predicted range of achievement scores for each school district based on results from tests mandated by the Statewide Testing Program. The performance of fifth-grade students from both traditional nine-month schools and year-round schools were compared using data from statewide, norm-referenced student scores on the Stanford Achievement Test, which were collected over a six-year period. Based on full battery and individual subtest results from the Stanford Achievement Test, average fifth-grade test scores for all schools were examined and a comparison was made between the actual scores and the predicted achievement scores determined by the State Office of Education. Shields and Oberg observed the mean scores for both year-round and traditional year schools to determine the percentage of schools and scores that were above, within, or below the range of their predicted scores.

The results of this study supported the inclination that year-round education is associated with academic improvement and is conducive to student gains. After comparing year-round and traditional calendar schools, data indicated that students attending year-round schools performed significantly better than nine-month schools, as



more of their scores fell within the predicted range (Shields & Oberg, 1999). These results provide evidence for the effectiveness of year-round education based on statewide, norm-referenced test scores. Further, when the researchers adjusted for differences in socioeconomic status, performance of the fifth grade students supported not only the assertion that year-round education is beneficial, but that it is particularly advantageous for students from lower socioeconomic backgrounds (Shields & Oberg, 1999).

Based on the available research investigating year-round education, it appears as though the primary focus has been on achievement gains in math and reading (Frazier-Gustafson et. al., 2000; Kneese, 2000; Palmer & Bemis, 1999). In 2000, Frazier-Gustafson et. al. examined student achievement at a balanced calendar school in its fourth year of implementation compared to a traditional calendar school within the same school district. Longitudinal data was collected over the course of one year, beginning in kindergarten and ending upon the completion of first grade. The researchers were interested in determining student gains in math and reading based on data from the Peabody Individual Achievement Test-Revised (PIAT-R), which were collected once at the beginning and end of each of the school years in kindergarten and first grade. Results showed that compared to children attending the traditional calendar school, students beginning kindergarten at the balanced calendar school showed better gains at the end of first grade in both reading and math (Frazier-Gustafson, DeLong, & Jones, 2000).

Illustrating similar results, a meta-analytic review of data collected over the last three decades showed that out of a total thirteen comparisons of year-round versus traditional calendar schools, eleven depicted significant positive results favoring year-

round education in reading (Palmer & Bemis, 1999). Similarly, nine studies out of eleven provided significant evidence for the effectiveness of year-round education for math achievement (Palmer & Bemis, 1999).

Despite the evidence indicating that year-round education results in increased academic achievement, debate continues regarding the effectiveness of year-round education and its perceived benefits for different groups of students. Some of the available research in the area has indicated that year-round education is beneficial for disadvantaged students but is not advantageous for average, middle-class students (Palmer & Bemis, 1999; Wildman, et. al., 1999; Wintre, 1986).

Gandara and Fish (1994) examined student achievement at three elementary schools experimenting with calendar change, through a program called the Orchard Experiment. Each of the three schools implemented a continuous learning calendar, extended the school year by 43 days, and provided remedial courses during intersessions for disadvantaged or at-risk students. These students were identified based on whether or not they received categorical funding, and/or received Aid for Dependent Families (AFDC) or the free and reduced lunch provided by the school district. Three control schools were identified and matched according to similar demographics and were used as comparisons to determine the effectiveness of the Orchard Experiment. Researchers were interested in the achievement gains in math and reading for the student population as a whole and specifically for students identified as being at-risk. Standardized test scores in math and reading at all of the schools were collected over four years and compared.

In terms of the student population as a whole, results indicated that there were achievement gains for students in two of the three schools, with one school confirming substantial gains in reading and the other indicating significant gains in math. Results for at-risk students showed that all three experimental schools significantly improved in student reading scores, while one of the three reported significant improvements in math as well. Based on previous research suggesting that year-round education benefits disadvantaged or at-risk students (Gandara & Fish, 1994; Shields & Oberg, 1999; Cooper et. al., 1996; Davies & Kerry, 1999), it was not surprising that targeted students at the three experimental schools showed significant gains in achievement (Gandara & Fish, 1994).

Further examining the differential effects of year-round education for students of varying levels of socioeconomic status (SES), Kneese (2000) conducted a study in which she compared fifth and seventh grade student achievement in math and reading in six matched year-round and traditional schools. Pretest and posttest reading and math scores were obtained from District Level Tests, which are a series of standardized achievement tests that measure gains and progress from year to year. According to mean gain scores in math and reading, all three year-round schools showed greater improvement from the spring (pretest) to the fall (posttest) when compared with the three traditional calendar schools (Kneese, 2000). When achievement gains were analyzed according to SES, the results contradicted previous research that suggested that year-round education was not beneficial for advantaged students (Wildman et. al., 1999; Wintre, 1986). Reading and math gains significantly favored high-SES year-round schools, but only slightly favored

the mid-SES and low-SES year-round schools. Based on evidence from this study and others, there may be benefits of year-round education for students of all socioeconomic status (Kneese, 2000; Wildman, et. al., 1999; Wintre, 1986; Gandara & Fish, 1994; Shields & Oberg, 1999; Cooper et. al., 1996).

### *Ineffectiveness of Year-Round Education*

It has been argued that year-round education, involving instructional periods followed by brief intersessions reduces the amount of learning loss over the three-month summer break (Cooper et. al., 1996; McMillen, 2001; Beggs & Hieronymus, 1968). However, reviews investigating differences in student achievement in year-round schools versus traditional nine-month schools have been inconsistent. Although the majority of the information obtained for this literature review supported the usefulness of year-round education, it would be an injustice to only present the findings from these studies. An extensive literature review showed that some studies found no differences when comparisons between year-round and nine-month schools were made, though the majority of these studies were not accessible (Campbell as cited in Naylor, 1995; Zykowski as cited in Naylor, 1995; Merino, 1983; North Carolina State Board of Education, 2000; Wintre, 1986).

Notably, educators and parents are primarily concerned with the academic achievement of students and this concern is heightened when discussions of school calendar change arise. In 1983, Merino published a review of studies examining year-round education and indicated that the positive effects of year-round education were less than adequate. Of nine studies reviewed comparing student achievement in year-round

versus traditional schools, based on pre/post test designs, Merino reported that only three favored year-round schools (Merino, 1986). Two of the studies reviewed by Merino showed that there were negative effects of year-round schools. The first described detrimental effects of year-round education in reading, language arts, and math for students in grades three through six (Harlan, 1973 as cited in Merino, 1983). While the second indicated that students in grade nine from a year-round school displayed deficits in algebra when compared with ninth grade students in a nine-month school, based on achievement and standardized test scores (Matty, 1978 as cited in Merino, 1983). The remaining four studies examined by Merino indicated that there were no significant differences between year-round and traditional calendar schools based on student academic achievement (Merino, 1983).

Based on the evidence from Merino's review of the literature addressing comparisons between year-round and traditional schools, one might conclude that year-round education does not significantly affect student achievement and progress. However, Merino cautioned this assumption stating that benefits of year-round education are often latent for the first few years after implementation. Merino discussed that this is possibly due to the fact that frequently there are difficulties associated with the development and implementation of a new program. She therefore encouraged that researchers interested in determining the effectiveness of year-round education, postpone their investigations until the year-round school has been in effect for several years (Merino, 1983; Kneese, 2000). The year-round school that will be examined in this proposed study has only recently implemented the year-round calendar, beginning with

the 2002-03 school year. Therefore, the information regarding the effectiveness of year-round education during the first several years should be considered.

Wintre (1986) challenged commonly held assumptions regarding the negative effects of summer on learning and retention. It has been postulated that children take an active role in their learning and education and that attending school is merely one avenue for this discovery process. The assumption that active discovery and learning discontinue at the termination of the school year contradicts this notion (Wintre). To test this theory, Wintre conducted a study to examine the overall academic skills of middle-class students in grades one, three, and five during the spring and fall semesters, in order to determine if there were significant losses in learning after a three-month summer vacation. Students were administered the Metropolitan Achievement Tests (MAT), which included batteries measuring four main content areas, including word knowledge, reading, mathematics concepts, and mathematics computations.

Results supported Wintre's assumption that learning continues over the summer vacation, showing that the students' scores were higher in the fall than in the previous spring, on average. Specifically, when the four content areas were combined, results showed that there were significant summer gains for students in grades one and five, but not three. Of the four content areas, students showed significant gains in word knowledge, reading, and mathematics, when all three grade levels were combined. Mathematics computation was the only content area in which students displayed summer losses, and students in grade three were the only group that experienced such losses. Although the results of this study challenged the validity of academic losses over the

summer for middle-class students, the author noted that results may differ for students of low socioeconomic status (SES), thus more research in this area is warranted (Wintre, 1986).

Evidence has been presented in which both the effectiveness and ineffectiveness of year-round education were discussed. One study that was reviewed described findings in which there were no differences in achievement scores between year-round and traditional nine-month schools. Inconsistent results obtained from studies investigating the utility of year-round education over and above traditional calendar schools has prompted the attention of educators, particularly those in which year-round education is a reality. In 2000, the North Carolina State Board of Education conducted a study comparing 65 traditional and year-round public schools using data from 1996-98 to uncover if there were student gains from the 1996-97 (year 1) year to the 1997-98 (year 2) year. Upon completion of a school year, students in grades three through eight from both year-round and traditional schools were required to complete end-of-grade (EOG) exams to measure student learning and achievement. Scores from 28,000 students in areas of reading and math across the six grade levels were compiled and analyzed and compared between the two different school calendars (North Carolina State Board of Education, 2000; McMillen, 2001).

The mean standardized achievement scores from year one to year two showed differences of .13 and .22 respectively for reading and math, slightly, but not significantly, favoring the year-round schools. Results demonstrated that there were no significant results favoring one school calendar over the other in either of the two

subjects, math or reading (North Carolina State Board of Education, 2000; McMillen, 2001). Though the results of this study did not favor the year-round schools in terms of student academic achievement, the North Carolina Board of Education suggested that non-academic outcomes of year-round education should be investigated. Further, they claimed that if positive non-academic outcomes favored year-round education, then restructuring the school calendar might be beneficial (North Carolina Board of Education, 2000).

Several studies indicate that the effectiveness of year-round education might not be apparent prior to four years of implementation, further positing that student gains have a tendency to decelerate after several years of implementation (Kneese, 2000; Merino, 1983). Obviously, these factors need to be considered and addressed in further research. Although the studies above illustrate a grim picture for the usefulness of year-round education over traditional nine-month education, one cannot ignore the plethora of available studies presenting the other side of the debate.

A literature review of the available research on year-round schools depicted studies that have relied upon the use of standardized achievement tests as measures of student academic gains and progress. However, such achievement tests typically rely on selection-type responses, rarely require students to produce responses on their own, and generally do not assess students based on the curriculum they are being taught in the classroom (Shinn, 1989). Further, due to the incongruence of standardized achievement tests and curriculum objectives, teachers and other educators often deem the information obtained from these tests invaluable (Deno, 1985). As a result, many teachers prefer



informal observation of student performance, of which the reliability and validity is questionable. Curriculum-based measurement (CBM), an alternative performance measurement technique combining aspects of both achievement tests and teacher observation has been introduced and established in the field of education (Deno, 1985). In order to determine the effectiveness of year-round education versus traditional calendar education, a reliable and valid form of assessment, such as CBM, can offer valuable information to educators, parents, and community members.

### Curriculum-Based Measurement

#### *Development*

When determining learning rate and academic growth, achievement tests have been criticized for their inability to provide educators with data that is consistent with the criterion guided by curriculum (Elliot & Fuchs, 1997). Curriculum-based measurement (CBM) provides both regular and special education personnel with an alternative to standardized tests of achievement. The development of CBM resulted from teacher requests for a data-based measurement system for assessing and monitoring student progress in core areas of the curriculum, including math, written expression, spelling, and reading (Shinn, 1989; Deno, 1985). Although CBM can be used to assess a variety of academic areas, due to the nature of the study, and the fact that reading is the most common problem in academics, the focus will be on CBM's usefulness in reading.

#### *CBM and Growth Standards*

Advocates for the use of CBM in education have pointed to its usefulness in determining patterns in developmental growth rate (Fuchs & Deno, 1992; Deno, 1985;

Shinn, 1989). According to Deno (1985), patterns of reading growth rate can be reliably indexed throughout the course of elementary school based on student performance in reading aloud from curriculum-based text (Fuchs & Deno, 1992). Deno (1985) further claimed that sample performances from passages read aloud can be used as indicators of reading achievement. Curriculum-based measurement's capability of monitoring progress is especially beneficial when determining academic growth among students in special education compared to students in general education. In a recent study conducted by Deno, Fuchs, Marston, and Shin (2001), reading gains for students with and without learning disabilities were compared through the use of CBM. Results confirmed that overall, students in general education demonstrated superior growth rates when compared to their peers receiving special education. The growth rates of students with learning disabilities were less than half that of the growth achieved by the students without learning disabilities (Deno, et. al., 2001). Based on the results of this study, it is apparent that teachers and other school personnel have the capability of determining growth standards for students in both special education and general education. Further, it is possible to document student growth in academics through repeated measurement using curriculum-based measurement (Deno, et. al., 2001).

Considering that reading is potentially one of the biggest and most common problems facing students in school, CBM can provide valuable information regarding student progress and performance in reading over repeated trials. Based on previous research on CBM (Deno, et. al., 2001), students that receive special education, that are academically disadvantaged, progress at a slower rate in reading than their peers in

general education. Previous research has also indicated that students considered academically at-risk or disadvantaged appear to make more progress in year-round schools versus traditional schools, due to the elimination of the extended summer vacation (Gandara & Fish, 1994; Shields & Oberg, 1999; Cooper et. al., 1996; Davies & Kerry, 1999). In order to determine differences in reading gains between students in special education at a year-round school versus students in special education at a traditional nine-month school, researchers should take advantage of curriculum-based measurement's sensitivity to student progress, and administer CBM as an alternative to standardized achievement tests when determining student academic progress.

#### Present Study

Due to the inconsistency and sparseness of the research comparing year-round schools to traditional nine-month calendar schools, an investigation comparing the gains of students in year-round schools to the gains of students in nine-month schools is warranted. The purpose of the present study was to investigate the reading achievements of students in a newly established continuous learning calendar school compared with students in a regular nine-month calendar school, specifically targeting students receiving special educational services since based on research, these students were expected to suffer the most from an extended summer vacation. To examine if there were differences between the reading gains of students in a year-round schedule versus a nine-month schedule, curriculum-based measurement (CBM) was used as an alternative to traditional achievement tests to provide a measurement of student progress from the spring (pretest) to the fall (posttest).

The primary research question was whether or not progress in reading for students in special education in a year-round school was different than the progress for special education students in a nine-month school. Progress for the students in special education was also compared to the progress of students in regular education. It was hypothesized that students receiving special education in the continuous learning calendar school would show greater improvement and gains in reading than their cohorts receiving special education at a traditional nine-month calendar school. Considering that substantial percentages of the students at the two schools involved in this study received free and reduced lunches (49% and 54.90%) and thus were from low Socioeconomic Status (SES) families, it was expected that loss would occur over the summer months for those students attending the nine-month school (Cooper et. al., 1996; Learning, Retention, and Forgetting, 1978; Davies & Kerry, 1999).

## Methods

### *Participants*

One hundred fifty-six students participated in this study, however, 19 of the original participants from the nine-month calendar school were not included in the final sample. The excluded sample was receiving either English as a Second Language (ESL) services, a summer reading program or both. Therefore, participants for the present study included 137 elementary school students (48 males and 89 females), of which 22 were students receiving special education services, from a year-round school and a nine-month school in a suburban Midwestern city. The remaining 115 students were those receiving general education and were included for comparative interpretation purposes. Of the

participants, 56 were students from the year-round school, while 81 attended the nine-month school. Participating students represented grades one through five. At the pretest assessment, the participants ranged from grades one through four and at the posttest assessment, the same participants ranged from grades two through five. The number of general education and special education students based on grade and calendar type can be seen in Table 1. The number of males and females receiving general education and special education across calendar types is represented in Table 2.

### *Setting*

The present study took place in two elementary schools in a small Midwestern city from one district. School A served as one of the schools due to its recent implementation of a continuous learning calendar on a 45-15 schedule. The calendar change from a nine-month to a year-round calendar was implemented beginning with the 2002-03 school year and parents chose to enroll their students in this school. In terms of demographics, minority students, including African American, Hispanic, and Alaskan Indian students comprised 6.95 % of the population. Forty-nine percent of the students attending School A received free and reduced school lunches and 22.46% of the student population received special education services. School B operated under a nine-month calendar and served as the other school setting in which data collection took place. African American, Hispanic, Asian, and Indian students represented 35.57% of the school population and 54.90% of the students were eligible to participate in the free and reduced lunch program. These elementary schools were selected because of the

similarities in the percentage of free and reduced lunches, ensuring that socioeconomic status was comparable between the two populations of students.

### *Materials/Instruments*

Materials included curriculum-based measurement (CBM) reading probes for grades one through five that were consistent with the reading curriculum of the two schools. CBM was developed as a standardized method for measuring student achievement and competence in the curriculum, particularly as a tool for determining the efficiency of instructional techniques and a method for monitoring student growth and progress (Deno, 1985; Fuchs & Deno, 1992; Potter & Wamre, 1990; Deno, Fuchs, Marston, & Shin, 2001; Knutson & Shinn, 1991).

CBM meets several criteria that render it a desirable method for assessment, program planning and development, screening and identification, IEP planning, and progress monitoring (Deno, 1985; Marston & Magnusson, 1985; Fuchs & Deno, 1992). CBM not only provides educators with important information regarding current levels of performance and relative standings, but also yields information about relative change so that academic growth and improvement can be monitored over time (Shinn, 1989; Deno, et. al., 2001). Due to the short duration of CBM, it is a time efficient method that can be frequently administered by teachers and other educators. For reading, students are timed for one minute as they read from a basal reader, while a teacher or other school personnel records number of words read correctly as well as the number of mistakes (Shinn, 1989). Curriculum-based measurement is advantageous because its measures can be both norm- and individually referenced (Shinn, 1989; Knutson & Shinn, 1991). CBM can be utilized

not only as an indicator of growth within each individual student but it can also answer questions regarding differences in growth between students in the same class, school, or district (Shinn, 1989; Deno, et. al., 2001).

CBM was established as the evaluation instrument due to the fact that it is both a valid and reliable assessment and progress monitoring tool. The validity of CBM for reading was first established in a study conducted by Deno, Mirkin, and Chiang (1982, as cited in Shinn, 1989) in which five measures for progress monitoring in reading were identified. However, due to the nature of the proposed study, only the fluency measures will be relevant, thus only these measures will be discussed.

These five measures were then correlated with already established, norm-referenced tests for reading in order to determine their validity. Based on information yielded from the one-minute oral reading passages, researchers concluded that passage reading was a valid measure of student reading ability (Deno, Mirkin, et. al., 1982 as cited in Shinn, 1989). Correlations between reading fluency and reading skills have also been examined to determine the criterion-related validity of CBM. Measures of reading fluency were compared with criterion-referenced basal reading mastery tests to determine if CBM was correlated with tests of general reading proficiency. Based on this correlational data, which indicated that CBM reading fluency measures were highly correlated with reading test scores, support for CBM as a valid indicator of general reading ability was established.

Considering that the validity of CBM for reading has been established, and recalling that “all valid tests are reliable,” it is safe to draw positive conclusions regarding the

reliability of CBM for reading. According to Shinn (1989) reading reliability was confirmed through the use of three methods, including test-retest reliability, parallel form estimates, and interrater reliability. These three methods generated impressive results with coefficients ranging from .82-.97, .84-.96, and .99, respectively, providing evidence for the reliability of CBM reading measures. The reliability of CBM reading measures has been established, as school psychologists or other educators are able to administer reading probes and the results are generalizable to other times, other items, and other testers.

### *Procedure*

After receiving parental consent, students in both regular and special education representing grades one through five from School A (continuous learning calendar school) and School B (nine-month calendar) were administered CBM reading probes. Participants worked one on one with graduate students from the University of Nebraska at Omaha. The students were instructed to read aloud from a reading probe derived from the curriculum for one minute, while a researcher recorded the number of words read correctly, as well as the number of mistakes. A total of three reading probes were administered to each student once during the spring semester and once again during the fall semester, and median scores for each student were calculated. The reading probes varied in difficulty based on the grade levels of the students. The researchers, to ensure that instructions were consistently administered to each participant, followed a strict script. Researchers said, "When I say 'start,' begin reading aloud at the top of this page.



Read across the page. Try to read each word. If you come to a word you don't know, I'll tell it to you. Be sure to do your best reading. Are there any questions? 'Start.'"

Scoring of the reading probes included counting the number of words read correctly per minute as well as the number of mistakes. Words read correctly were those that were pronounced accurately within the context of the passage. Mistakes included words that were mispronounced, words that were omitted, and words that were substituted for the stimulus word. If during the passage reading a student was not able to correctly pronounce a word within three seconds, the administrator pronounced the word for him/her, but a mistake was recorded. The number of mistakes were subtracted from the total amount of words read to determine the number of words read per minute.

#### *Data Analysis*

Descriptive statistics were calculated and summarized. Based on the number of words read correctly and the number of mistakes on all three reading probes, median reading scores were calculated and compared for each student during the spring (pretest) and fall (posttest). Tests of statistical significance were utilized as a means to compare the mean differences for each student from spring to fall. In order to determine the statistical significance of pretest-posttest scores for each student, a 2 X 2 mixed model analysis of variance (ANOVA) was conducted. For each student assessed, pretest versus posttest gains were analyzed. These differences served as the within subjects variable. The between subjects variable was the type of school that students attend, year-round versus nine-month. Statistical tests determined the magnitude of the median differences between the students in regular education and those receiving special education services

across both year-round and nine-month schools. Specifically, the researcher was interested in whether there were significant gains for students receiving special education versus students in regular education, and whether or not the gains were larger in one school calendar than another. Students in regular education were used as a control to compare the reading gains of students receiving special education services in the year-round school versus the traditional nine-month school based on CBM reading scores. The type of calendar served as the independent variable, while the dependent variable was the scores on the CBM reading probes.

### Results

Means and standard deviations for grades two, three, four, and five in both year-round schools and nine-month schools are presented in Table 3. Means and standard deviations for students receiving general education and special education services in both year-round and nine-month schools are presented in Tables 4 and 5, respectively.

Results of the 2 X 2 mixed model ANOVA indicated a significant main effect for type of calendar. Overall, regardless of whether students were in general education or were receiving special education services, students in the year-round school made significantly more reading gains from pretest to posttest than students in the nine-month school,  $F=3.96, p=.049$ .

No overall differences were found for type of curriculum on student reading gains. Regardless of whether students were attending a year-round school versus a nine-month school, there was not a significant difference in reading gains for students receiving general education versus special education,  $F=.395, p=.531$ .

Likewise, there was not a significant interaction between calendar type and curriculum type,  $F=.124, p=.725$ . The difference in pretest/posttest reading gains between general education students and students receiving special education did not differ between the year-round and nine-month school.

#### *Inter-rater Reliability*

In approximately 10% of the reading probe administrations a second person also listened to the students read to ensure that there was consistency in determining correct and incorrect words read. To determine inter-rater reliability, the researcher used the subsequent formula: number of agreements / number of agreements + disagreements x 100. Inter-rater reliability was found to be 93% for the administered reading probes.

#### Discussion

Due to the lack of studies comparing the effectiveness of year-round schools versus traditional nine-month calendar schools and the inconsistent results reported in the few studies that do exist, the present study sought to provide additional research in the area of year-round education. Specifically, and unique to this study, the current researcher compared readings gains for students in general education and students receiving special education services in both year-round and nine-month schools, utilizing CBM reading probes. Three hypotheses were developed and tested, however, only one of the three was supported by the results.

Previous research has indicated that students, particularly economically disadvantaged students, suffer from summer learning loss and less retention due to extended summer vacations (Cooper et. al., 1996; Learning, Retention, and Forgetting,

1978; Davies & Kerry, 1999). Based on this research and demographic information obtained from the schools in this study regarding the substantial percentage of students from the nine-month school receiving free and reduced lunch, it was hypothesized that students in the year-round school would show greater reading gains than their cohorts in a nine-month school. This hypothesis was supported indicating that as a whole, students in the year-round school made significantly more reading gains from pretest to posttest than students in the nine-month school. These results would support previous research that has demonstrated the effectiveness of year-round education on achievement in reading gains (Frazier-Gustafson et. al., 2000; Kneese, 2000; Palmer & Bemis, 1999).

Likewise, it has been found in the research that academically disadvantaged students also exemplify negative consequences of elongated summer vacations, such as learning loss and academic regression (Cooper et. al.; Learning, Retention, and Forgetting; Davies & Kerry). Assuming that regardless of calendar type, students in general education would have an advantage in academic skills when compared to students receiving special education services, it was hypothesized that students in general education would show greater reading gains than students receiving special education. This hypothesis was not supported. Although students in general education achieved slightly greater reading gains, they were not significantly different from the reading gains achieved by students receiving special education services.

Incorporating the theory of past research regarding the effectiveness of year-round education for academically and/or economically at-risk students, the final hypothesis was unique to the current study. The researcher hypothesized that pretest/posttest reading

gains would be greater for students receiving special education services in the year-round school than the gains for students receiving special education services at the nine-month school, when compared with general education student gains in each school. However, this hypothesis was not supported. Specifically, the difference in pretest/posttest reading gains between general education students and students receiving special education did not differ between the year-round and nine-month school.

A variety of studies like the present have reported the academic benefits for students attending year-round schools. Furthermore, those in favor of year-round education have cited numerous advantages to a year long school calendar, such as improved academic achievement (Shields & Oberg, 1999; Kneese, 2000; Palmer & Bemis, 1999; Frazier-Gustafson et. al., 2000), enhanced motivation for students and teacher following frequent breaks (Shields & Oberg, 1999; Palmer & Bemis, 1999; Gandara & Fish, 1994), and opportunities during intersessions to provide enrichment activities (North Carolina State Board of Education, 2000; McMillen, 2001; Palmer & Bemis, 1999; Learning, Retention, & Forgetting, 1978; Gandara & Fish, 1994).

Like past research (Frazier-Gustafson et. al., 2000; Palmer & Bemis, 1999; Gandara & Fish, 1994; Kneese, 2000) this study reported results indicating enhanced reading achievement for students attending a year-round school. Yet, this study differed from past studies, making it unique to the research concerning year-round education. Much of the previous research in this area examined student progress based on standardized tests (Shields & Oberg, 1999; Frazier-Gustafson et. al., 2000; Kneese, 2000; Gandara & Fish, 1994). However, the current study utilized CBM as a tool to measure

reading performance and determine student performance gains from pretest to posttest. Similarly, past research focused primarily on the effectiveness or ineffectiveness of year-round education for students in a general education curriculum. However, the benefits of year-round education for students receiving special education have not been addressed in the previous literature. The current study sought to provide information regarding both student populations in order to develop a better understanding of the effectiveness of year-round schooling for all students.

#### *Implications for Educators*

Results of the current study add to the literature citing the effectiveness of year-round education. As Davies and Kerry (1999) suggested, the growth of research reporting that student achievement and growth can be enhanced by calendar change is substantial and should not be ignored. Specifically, this study suggests that a more continuous school calendar was beneficial for all students, as students in the year-round school made more reading gains than students in the nine-month school. With this evidence it is realistic to encourage educators to examine the current approach to formal schooling and possibly progress toward educational and structural reform.

#### *Limitations*

As with most research, the current study has limitations. Overall, the sample size was adequate, however, when compared with students from the nine-month school, fewer students comprised the year-round school sample (81 and 56, respectively). Likewise, a relatively small sample of students from both the year-round and nine-month schools receiving special education services was represented in this study (8 and 14,

respectively). This small number of students receiving special education services reduces the power of the statistical analyses. Perhaps a larger number of students from the year-round school, as well as more students receiving special education services from both calendar types would have resulted in more significant reading gains.

In this particular study, the researcher only compared one year-round school with one nine-month school, which limits the generalizability of the results to other schools in other areas. Based on the information obtained through this study it is not clear whether the reading gains for students in the year-round school were the result of the school calendar, unique things being implemented in the school, or a combination of both. Similarly, another limitation is the lack of information regarding the use of intersessions for remedial instruction and/or tutoring.

#### *Future Research*

Therefore, further investigation would be beneficial, not only to replicate the above findings, but to provide additional information to the literature regarding the effectiveness of year-round education for students receiving special education services. In the present study the researcher only investigated reading gains for students in general education and special education in the two calendar types. It would be interesting to examine whether differences would be evident in other academic areas, such as math, writing, or reading comprehension. Beyond the effectiveness of a year-round calendar for students' academics, future research could address the effectiveness of a continuous calendar for other domains of education such as social development and performance. Additional studies could also investigate the relationship between enrichment activities

provided during the intersessions and student progress and performance, as this was not addressed in the present study. Future research could also expand similar procedures to students who are English Language Learners to determine whether a more continuous school calendar is beneficial for them.

### *Conclusion*

Past research has indicated that the benefits of year-round education might not be apparent for up to four years after implementation due to the difficulties and obstacles encountered when beginning a new program (Knees, 2000; Merino, 1983). The present study was conducted during the first full year of the year-round calendar being implemented, and already significant gains in reading for students attending the year-round school were recorded. Though there was not a significant difference between the reading gains of special education students at the year-round school and the nine-month school during this first investigation, the true effects of this year-round school may be even greater in three years. This notion reiterates the need for replication of this study and further investigation regarding the benefit of year-round education for all students, particularly those receiving special education services.



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Table 1.  
Number of General and Special Education Students Based on Grade Level and Calendar Type

Group	Grade	Year Round	9-Month	Total
		N	N	N
General Education	2	10	17	27
Special Education	2	2	1	3
Total	2	12	18	30
General Education	3	14	11	25
Special Education	3	3	6	9
Total	3	17	17	34
General Education	4	12	13	25
Special Education	4	1	3	4
Total	4	13	16	29
General Education	5	12	26	38
Special Education	5	2	4	6
Total	5	14	30	44

*Note.* Year Round N = 56; 9-Month N = 81

Table 2  
 Number of General and Special Education Students Based on Sex and Calendar Type

Group	Year Round	9-Month	Total
	N	N	N
Girls	41	48	89
General Education	33	42	75
Special Education	8	6	14
Boys	31	17	48
General Education	25	15	40
Special Education	6	2	8

Table 3  
 Mean and Standard Deviations for Correct Words Read Per Minute for Pretest, Posttest,  
 and Difference Scores by Grade Based on Calendar Type

Group	Grade	Pretest		Posttest		Difference	
		M	SD	M	SD	M	SD
9-Month							
	2	58.61	34.41	69	41.88	10.39	15.79
	3	90.31	37.89	90.75	39.65	3.35	7.91
	4	107.19	29.67	106.56	31.54	-0.63	11.06
	5	116.13	36.58	116.20	38.82	0.07	14.05
Year-Round							
	2	69.67	39.62	85.08	41.17	15.42	11.60
	3	81.82	29.30	88.53	32.21	6.71	11.36
	4	115.70	36.39	122.62	38.15	6.92	14.72
	5	103.10	29.37	109.93	26.87	6.79	15.38

*Note.*  $N = 137$  (81 students in 9-month school and 56 students in year-round school).

Table 4  
 Mean and Standard Deviation for Pretest, Posttest, and Difference Scores for General Education Males and Females by Calendar Type

Group	Pretest		Posttest		Difference	
	M	SD	M	SD	M	SD
Year Round						
Girls	98.00	39.33	108.24	40.62	10.24	12.44
Boys	93.73	31.93	99.27	24.46	5.53	16.53
9-Month						
Girls	104.36	45.36	110.05	46.05	5.74	16.42
Boys	99.85	27.55	97.50	26.34	-0.36	9.31

*Note.*  $N = 115$  (40 males and 75 females).

Table 5  
 Mean and Standard Deviation for Pretest, Posttest, and Difference Scores for Special Education Males and Females by Calendar Type

Group	Pretest		Posttest		Difference	
	M	SD	M	SD	M	SD
Year Round						
Girls	60.83	27.68	68.50	32.62	7.67	13.23
Boys	85.00	11.31	93.50	16.26	8.50	4.95
9-Month						
Girls	52.38	22.26	49.63	20.43	-2.50	4.44
Boys	69.00	36.83	72.67	36.81	4.00	5.18

*Note.*  $N = 22$  (8 males and 14 females).