

The School of the 21st Century Is Making a Difference: Findings from Two Research Studies

Issue Brief



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The School of the 21st Century Is Making a Difference: Findings from Two Research Studies

This brief addresses key questions regarding early education within the schools by presenting findings from two research studies on the School of the 21st Century (21C). 21C is a comprehensive school reform model in which multiple programs and services are provided in the school for children from birth to age 12. Included in the program are several components, but we discuss only one of these in this brief: all day, year-round child care for children ages 3, 4, and 5.

The provision of early childhood services through the public schools is increasingly popular. Currently, approximately 35 percent of public schools in the country offer some form of early childhood education (ECE), serving approximately one million childrenⁱ. Proponents of offering early childhood education and/child care through the public schools have made four main arguments for the potential benefitsⁱⁱ.

First, public schools are part of an existing educational system and have a management structure and experience serving large numbers of children and coordinating streams of money from various sources and levels of government. Second, since schools are public institutions, early childhood programs in the public schools have the potential to ensure higher standards of

quality, as well as staff training, remuneration, and accountability.

Third, public school education is universally available, so if all schools offered programs for three and four year olds, access to early childhood programs may also be universally available.

Finally, the transition from preschool to kindergarten would be smoother and less stressful for children if it occurred within the same school building.

Although the potential benefits of school-based early childhood programs are numerous, some concerns about possible detrimental effects of schools' involvement with young children existⁱⁱⁱ. The primary concern is that programs offered through public schools would not be developmentally appropriate. That is, teachers would focus more on rote academic learning than on a constructivist, whole-child approach to learning in which children spend a substantial part of the day learning through play.

To date, not much research has focused specifically on the quality of and child outcomes associated with early childhood programs in public schools, and no consensus exists in the research that has been conducted. For example, Farran and colleagues observed that preschool

teachers in 11 North Carolina public schools tended to be involved with children in ways that were not developmentally appropriate^{iv}. But in another evaluation of almost 300 preschool classrooms, Epstein found that public school classrooms were slightly higher in the quality of teacher-child interactions than were Head Start and nonprofit center classrooms, and there was no indication that the public school classrooms were less developmentally appropriate^v. In the 1995 Cost, Quality, and Outcomes study, researchers found that preschool provided in the context of public schools was of higher quality than preschool provided by other organizations^{vi}.

21C was one of the first programs to promote the use of the school for early childhood education and child care, among other services (see insert)^{vii}. As the use of the school for such services becomes more common, 21C can continue to serve as a model for how to integrate early childhood education programs in the public schools successfully.

Conceptualized and developed at Yale University by Edward Zigler and Matia Finn-Stevenson, 21C was first implemented in Independence, MO, in 1988. Since then more than 1,300 schools in several states have implemented the program and continued its operation.

The actual implementation of 21C differs from community to community, since needs and

resources vary. All 21C schools, however, share the program's overall goal of ensuring the optimal development of all children and all programs are expected to adhere to 21C's guiding principles (see insert), one of which is universal access; that is, the provision of services to all children regardless of family income or other risk factors.

21C Program Components

- Guidance and Support for Parents
- Early Care and Education for Children Ages 3, 4 and 5
- Child Care for School-Age Children
- Health Education and Services
- Networks and Training for Child Care Providers
- Information and Referral

21C Guiding Principles

- Strong Parental Support and Involvement
- Universal Access to Child Care
- Non-Compulsory Programming
- Holistic View of the Child
- High-Quality Programming
- Professional Development for Child Care Providers

Two important points underlie the conceptualization and development of 21C: First, all families, regardless of their socio-economic status or other risks, may be in need of various support services, especially high quality child care. Second, in order to ensure that all children have access to good quality child care, we must establish a system of care and education, and work within the existing educational system. Hence, 21C uses schools, the rationale being

that this approach is efficient and effective; schools can provide the management infrastructure and accountability to ensure access to affordable, good quality childcare services.

Two studies that demonstrate the potential of the 21C model are reported within this issue brief. The first is the National Evaluation of the School of the 21st Century. The three-year National Evaluation followed two large cohorts of children, one starting in preschool and the other in kindergarten, from 10 schools in 5 districts around the country. Each year, researchers collected empirical data from student assessments, teacher surveys, parent surveys, and classroom observations. They also collected qualitative data from focus groups with teachers and with parents.

The second study is the 2004 to 2005 evaluation of 21C implemented in Arkansas (AR21C). The AR21C initiative is the most recent state-wide implementation of 21C (Connecticut and Kentucky, where 21C is known as Family Resource Centers, also have state-wide initiatives of the program). As in the National Evaluation, the evaluation of the Arkansas initiative was designed in part to assess the implementation of preschool within the schools and the impact of these efforts on children, families, and the school as a whole. Researchers collected school record data, including rates of special education, student turnover, and

absenteeism every year, as well as qualitative data from parents and school administrators.

For each of these two studies, we include: a) brief details of the research methods; and b) highlights of the major findings. In addition, we discuss the lessons learned from both studies and the implications to the provision of early childhood education and childcare within public schools.

The 21C National Evaluation

In the National Evaluation of the School of the 21st Century¹, researchers sampled 10 schools from 5 districts in 5 different states—Colorado, Connecticut, Kentucky, Massachusetts, and Missouri. Researchers chose districts based on two criteria. The first was that they represented demographic diversity in terms of urban, suburban, and rural populations. The second was that they had established 21C programs in place for at least five years and that the districts received ongoing technical assistance from the School of the 21st Century at Yale's Zigler Center.

Eight hundred sixty children and their parents participated in the study. The sample was socio-economically diverse, with a median family income of around \$25,000; was split evenly by gender; and was 74 percent European-American, 18 percent Latino, 3 percent African American, and 5 percent of mixed ethnicity.

¹ Supported by the US Department of Education

Seven hundred and eighty-four of the original participants remained in the study during the second year when researchers added an additional 200 to the sample.² Approximately 700 children remained through the third year of the study.

Researchers used subscales from the Woodcock Johnson-III Tests of Achievement^{viii} to measure emerging literacy and math skills to determine program impact. The researchers administered child assessments during the fall and spring of the first year of the study and in the spring of the second and third years to all participating students. Due to budgetary constraints during the second and third years of the study, researchers conducted fall child assessments in only three of the five districts.

Parents completed surveys in the spring of each year of the study. The parent survey included a number of questions adapted from several widely used measures of parent involvement in education^{ix}. The response rate for parent surveys was approximately 70 percent in the first year, 61 percent in the second year, and 61 percent in the third year.

Head teachers in the 21C preschool child care classes completed a survey that included items pertaining to their educational attainment

and training, salary, years of experience, number of adults in their classroom, and number of children in their classroom. Researchers adapted these items from the teacher questionnaire of the Early Childhood Longitudinal Study^x. Head teachers also completed the Social Skills Rating System (SSRS) assessment^{xi} on participating children.

In the first year of data collection for the National Evaluation, researchers observed all preschool classrooms serving participating children ($N = 28$). All programs were either accredited by or in the process of being accredited by the National Association for the Education of Young Children (NAEYC). The preschool head teachers observed were mostly White females, with one teacher of Hispanic origin. In the second year of data collection, researchers observed 13 of the 18 preschool classrooms.

Researchers observed each classroom for three hours using the Early Childhood Rating Scale-Revised (ECERS-R), a widely used measure of early childhood classroom quality^{xii}. The ECERS-R includes 43 items measuring seven facets of quality: space and furnishings, personal care routines, language-reasoning, activities, interactions, program structure, and parents and staff. Observers rate each item on a scale from one through seven. A score of one represents unacceptably low quality, a score of

² The rationale for adding the extra 200 was to counterbalance anticipated attrition of the original sample in conducting longitudinal growth curve analyses.

three represents minimal quality, a score of five represents good quality that is developmentally appropriate for young children, and a score of seven represents excellent quality. The ECERS-R has established internal consistency and validity in terms of its relation with child outcomes^{xiii}.

Observations were conducted in the spring, between March and May. Classroom observers were members of the 21C research team trained on the ECERS-R using the video and training manual developed by Harms and colleagues (1998). During Year 2, independently trained observers with no connection to the School of the 21st Century accompanied observers in some classrooms at each of the five districts.³

Researchers conducted focus groups with teachers (preschool and kindergarten) and parents, separately, in the spring of Year 1 at schools in all five of the districts. They used the same set of questions to guide each focus group. Questions focused on program issues, the school's climate, and parental involvement. The discussions lasted from one to one-and-a-half hours and were audio-taped and then transcribed.

³ For the most part, inter-observer reliability was high with absolute agreement intraclass correlation coefficients between observers and shadows ranging from .75 to .98. However, one observer was consistently unreliable, $r = .57$ and four of her observations had to be discarded, resulting in the final sample size of 13 classroom observations.

Findings

21C's Early Childhood Environment

In the first year of the National Evaluation, researchers observed all preschool classrooms and asked all head teachers to complete a survey. In Year 2, researchers observed a sample of 13 preschool classrooms across the five sites. We summarize the results below and in Table 1, and compare findings to quality scores from other national preschool and early childcare data, when available. By Year 3 of the evaluation, no participating children remained in preschool; therefore, researchers did not conduct any observations or preschool teacher surveys. Table 1 and the insert on the following pages highlight all the quality findings from this part of the evaluation.

As indicated on the following page, preschool and early child care classrooms in the 21C National Evaluation were of higher quality, as assessed by the ECERS-R, compared to other large-scale studies. The average 21C ECERS-R scores from both years represented high quality, developmentally appropriate care. In comparison, all other large scale studies on Head Start, child care, and state-funded preschool programs have reported average ECERS scores below 5^{xiv}.

This quality in 21C preschools was achieved even though levels of educational attainment, turnover, salary, and child:teacher ratio were no better on average than national *preschool* comparisons.^{xv} In comparison to national child care programs, however, 21C head teachers were better educated and, at least in Year 2, had higher salaries than child care providers.

Child Performance

Because 21C espouses a whole-child approach to education, we investigated emerging reading and math skills as trajectories of social

skills. The analyses⁴ followed children who attended 21C preschool⁵ through second grade, in comparison to national age norms.

These analyses also controlled for district-level effects on the Letter-Word Identification (emergent literacy), Applied Problems (math), and Quantitative Concepts (math) scales of the Woodcock Johnson.

ECERS-R

- Among the 28 preschool classrooms observed in Year 1, the mean ECERS-R score was 5.70, $SD = .73$, with a range from 3.59 to 6.65 and a median of 6.11.
- In Year 2, the mean ECERS-R score remained 5.70, $SD = .50$, with a range from 4.63 to 6.15.

Educational attainment

- In Year 1, 59 percent of the preschool head teachers held at least a bachelor's degree.
- In Year 2, 69 percent of head teachers held at least a bachelor's degree.

Child:teacher ratio and class size

- In Year 1, the average number of children (3 and 4 year olds) per class was 16.67, $SD = 3.75$, with a range from 10 to 30. Because at least two adults were in each classroom (either a co-teacher or teacher assistant), the number of children represents an average child:teacher ratio of 8.3:1.
- In Year 2, the average number of children (3 and 4 year olds) per class was 17.54, $SD = 4.84$, with a range from 11 to 30. Because two adults were in each classroom (either a co-teacher or teacher assistant), the average number of children represents a child:teacher ratio of almost 9:1.

Staff turnover

- Researchers used teachers' reports of how many years they had worked at the current school as a gauge of turnover. The mean number of years worked for the 19 teachers who answered the question in Year 1 was 5.63, $SD = 4.07$, with a range from 10 months to 12 years.
- The mean number of years worked for the 12 teachers who answered the question in Year 2 was 6.67, $SD = 4.52$, with a range from 10 months to 14 years.

Salary

- In Year 1, the median salary of 21C preschool head teachers was between \$10,000 and \$20,000 per year. Three of the 28 teachers who reported their annual salary earned less than \$10,000 per year. An additional 14 earned between \$10,000 and \$19,999 per year. Six reported earning between \$20,000 and \$29,999. Two teachers earned between \$30,000 and \$39,000 per year, while three reported earning more than \$40,000.
- In Year 2, their median salary was between \$20,000 and \$30,000 per year. Three of the 11 teachers who reported their annual salary earned between \$10,000 and \$19,999 per year. An additional three reported earning between \$20,000 and \$29,999. Four teachers earned between \$30,000 and \$39,000 per year, and one reported earning more than \$40,000.

Table 1: Profile of 21C Early Childhood Classrooms

	# of Classrooms Observed	Average ECERS-R	% Head Teachers w/BA+	Average Years at school	Median Salary	Average Teacher: Child Ratio
Year 1	28	5.70	50%	5.63	\$10,000 - 19,999	8:1
Year 2	13	5.70	69%	4.52	\$20,000 - 29,999	9:1
National Comparisons		<5.0 ¹	73% ² 33% ³	5.8 ²	\$30,998 ² \$15,800 ⁴	5.4:1 ⁵

¹NIEER Preschool Quality Matters (Espinosa, 2002)

²The National Prekindergarten Study (Gilliam & Marchesseault, 2005)

³The Child Care Work Force Estimate (Burton et al., 2002)

⁴Current Data on Salaries and Benefits of the U.S. Early Childhood Workforce (2004)

⁵FACES – Head Start (2000)

For each analysis (Figures 1 through 3), we compared average scores for children at the same age from national norms. A score of 100 represents the population average. If there was no effect of 21C, we would expect the children to have the same relative score at every grade level after preschool, resulting in a flat line. As illustrated in the graphs, children’s standardized scores increased from preschool through the end of second grade for all subscales⁶. Further, even though the 21C children began preschool at lower than average levels of emergent literacy

and quantitative concepts scales, their scores were on average at or above 100 by the end of second grade. Analyses did not, however, detect any relative increase in SSRS social skills relative to national norms.

Issues Faced by 21C Schools in the Provision of preschool^{xvi}

As part of the National Evaluation, teachers and parents in focus groups discussed challenges to the implementation of school-based

⁶ For the Letter-word ID, the linear slope was significant, $p = .006$, with no significant quadratic deceleration over time, $p = .185$. For the Applied Problems, the linear slope was not significant, $p = .347$, but there was significant quadratic acceleration over time, $p = .024$. For Quantitative Concepts, the linear slope was significant, $p < .001$, and there was significant quadratic deceleration over time, $p = .021$.

Figure 1: Emergent Literacy, Compared to Age Norms

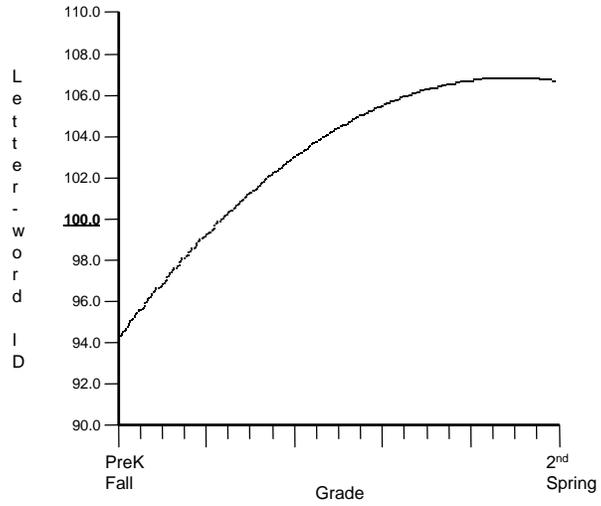


Figure 2: Emergent Math Skills (Applied Problems), Compared to Age Norms

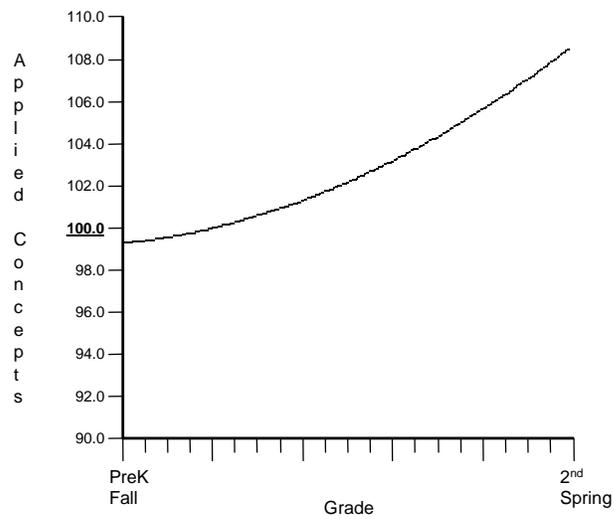
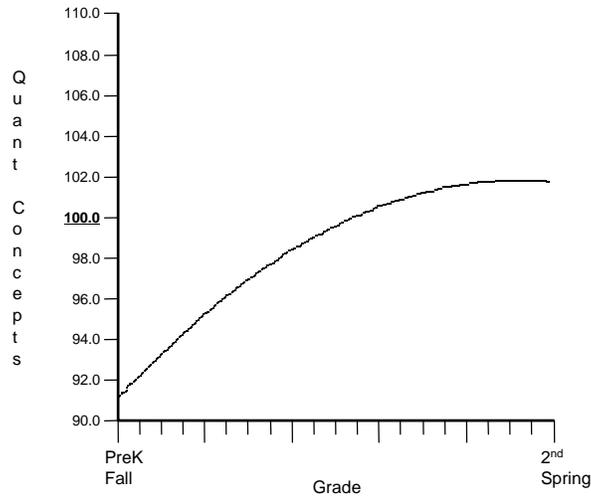


Figure 3: Emergent Math Skills (Quantitative Concepts), Compared to Age Norms



- *Limited space and resources.* Preschool teachers did not always feel they had equal access to school resources that were readily available to the elementary school staff. For example, one preschool teacher commented, “Can we use the paper in the copying room? Can we use the copy machine?” (p. 374). There were also some tensions regarding limited physical space allocated to the preschool programs and preschool activities. [E.G., “My room looks cramped. It drives me nuts.” (p. 375)]. Further, elementary school classes tended to be given scheduling priority for the use of communal spaces, such as the gymnasium, cafeteria, and playground, resulting in scheduling challenges for the preschool programs.
- *Salary inequities.* In most of the schools, kindergarten and elementary teachers had higher salaries than the preschool teachers and were on contract with the districts, which the preschool teachers were not. This discrepancy could result in tension, which even parents picked up on (e.g, “It would be nice to see preschool teachers compensated on a professional level.” p. 176).
- *Educational and training differences.* Kindergarten and elementary teachers in the schools were more likely to have bachelors and graduate degrees than were the preschool teachers, and focus group participants also noted some philosophical differences in training. Some preschool teachers felt that elementary school staff were “less aware of what early childhood [education] looks like,” leading to an environment where it could be “hard to feel connected” to the school (p. 375). For example, not all preschool teachers felt comfortable at faculty meetings.

preschool and factors that helped the schools successfully overcome those challenges. The box on the previous page highlights the primary challenges to implementation.

The 21C schools in the sample were successful in addressing most of the implementation issues described. Two factors led to the successful resolution of implementation issues: principal support and the buy-in of district administrators. When building and district administrators were not well educated about and supportive of early childhood education, integration of preschools into the elementary schools was more challenging. In such instances, administrators were required to change leadership style for the integration to succeed. As one teacher stated, the principals “will be challenged...and if they’re not going to support you, then [implementation] will be difficult to accomplish...the principal is key.” (p. 376).

Across the 21C schools in the sample, teachers and parents viewed the benefits of integrated preschool programs to far outweigh the issues that arose as a result of integration. Teachers felt that their expertise ultimately

increased as a result of collaboration with one another, and that such collaboration also helped children transition from preschool to kindergarten. Further, teachers often felt that integrating preschool into the elementary schools ultimately resulted in increased resources to help students and families.

Summary of National Evaluation Findings

- The 21C preschool and early child care programs were developmentally appropriate and of high quality in comparison to programs in other large-scale studies.
- Children who attended 21C preschool child care and education programs increased their academic skills from preschool through second grade, relative to national norms of children of the same age.
- Qualitative findings demonstrate that although there were some difficulties implementing an ECE program in a public school setting, it can be done and done well.

The Arkansas 21C Evaluation

21C began in Arkansas in 1992 with one school district, Paragould, and has since expanded to include services in more than 160 schools in 40 school districts. This effort, known as AR21C, was made possible with grant support from the Winthrop Rockefeller Foundation (WRF). WRF's support included grants to schools in Arkansas to implement 21C, as well as funds for Yale 21C to provide technical assistance and training and an on-going evaluation of the program's development in Arkansas and its impact.

21C school districts⁷ received grants for a four-year period, which enabled them to plan, establish, and/or enhance 21C in their communities. After the end of the grant period, the programs found other funds to sustain 21C services. As is the case in other states, 21C's implementation in Arkansas reflects the variation in needs and resources among communities, so each AR21C is unique. However, all AR21C programs provide a range of services and all adhere to the 21C guiding principles.

The AR21C initiative was implemented on a phase-in approach, enabling evaluators to: 1) document the process of implementation in each school every year, 2) create comparison groups based on the maturity of sites, and 3) identify

how each 21C component, regardless of maturity, was associated with school-wide outcomes. The overall aim of the evaluation was to determine whether 21C is making a difference to children, families, and the schools and in what ways.

The expectation for implementation was that Arkansas 21C programs would have a range of 21C components and supplemental services and would achieve high quality early childhood education and child care. We also hypothesized that mature 21C sites, having been in operation for a longer period of time, would have had the opportunity to realize benefits. The newer programs were just beginning and, therefore, would have fewer, if any, positive outcomes. We conducted the evaluation, therefore, with the view that it takes time to implement programs and that outcomes should only be measured when programs are stable^{xvii}.

Although we have been collecting data on the AR21C initiative for each year since its inception, the evaluation presented here was conducted during the 2004-2005 school year. At that time, 21C programs were active in 34 school districts (representing 24 percent of all districts in Arkansas) and included 95 sites across Arkansas. Even though 21C is offered in various contexts, including middle and high schools, the evaluation focused on those programs offered in

⁷ Selected on their submission of a grant proposal in response to a publicized Request For Proposal.

Table 2: Profile Demographics of AR21C School Districts

	TOTAL ENROLLMENT (% of TOTAL)	GENDER (%)		ETHNICITY (%)					FREE AND REDUCED LUNCH RATE (%)	ENGLISH AS SECOND LANGUAGE (%)
		MALE	FEMALE	ASIAN	BLACK	HISPANIC	NATIVE AMERICAN	WHITE		
AR21C DISTRICTS	24	51	49	2	21	10	1	66	59	9
ARKANSAS	100	51	49	1	23	6	1	69	53	7

elementary schools. As Table 2 shows, the AR21C districts included in this evaluation were representative of the Arkansas population in terms of gender, ethnicity, and ESL students, with a somewhat higher percentage of children receiving free and reduced lunch at AR21C sites versus the state average.

We sent surveys to all 21C program coordinators detailing the program components and services available at each site, as well as the number and demographics of children and families served. We sent principals or other administrators at each site a survey on which to report their school record data for the year. This included excessive absenteeism rates, student turnover rates, special education referrals, numbers of in- and out-of-school suspensions, percentages of children reading at grade level, and PTA attendance rates. Principals and administrators reported these rates and percentages for the entire school setting, not for

individual children. Sixty-seven of the 95 sites returned complete information, representing a 71 percent return rate.

During the 2004 to 2005 school year, AR21C sites provided a variety of services to a large number of children:

- Early care and education to 1,945 children
- School-Age Child Care to 2,075 children
- Health services to 4,637 children
- Links with 189 private child care providers
- Guidance and support to 3,608 families
- 55 sites offered information and referral services
- 48 sites offered literacy programs
- 41 sites offered mental health services

Table 3: Child-Care Quality Rating Comparison

ECERS-R Score		Head Teachers w/ BA	Student to Teacher Ratio	Average Staff Length of Employment (years)
AR average	6.52	76%	10:1	6.0
National	5.7	69%	9:1	6.7

Findings

AR21C's Early Childhood Learning Environment

ECERS-R observations⁸ revealed that the Arkansas 21C programs⁹ had very high quality. Compared to the national 21C average of 5.7, the Arkansas sites' which reported ECERS scores (n = 27) scores ranged from 5.55 to 6.95, with an average score of 6.52. As Table 3 shows, Arkansas 21C sites had exceptional preschool program quality even when compared to the high standards of our national 21C sites, presented earlier.

These positive results compare favorably with a national survey by NIEER^{xviii} in which state-funded preschool program quality in Arkansas rated highest in the country. This information is also consistent with the National Preschool Study^{xix} which indicates that 77 percent of Arkansas preschool teachers have at least a bachelor's degree; the AR21C schools had a slightly higher average of length of

employment at 6 years compared to the Arkansas teachers in the National Preschool Study, who worked for an average of 4.87 years within their programs.

Maturity of Site

Researchers defined site maturity by the length of time 21C was operational at each site. Sites were considered *new* if they had been a 21C site for less than three years and *mature* if they had been a 21C site for more than three years. The following pages detail the analyses conducted on the school record data. We found significant findings for absenteeism, student turnover, percentage of students reading at grade level, and school suspensions. Special education and retention rates did not differ as a function of site maturity.

Absenteeism

Absenteeism rates are a powerful measure of how well a program is working since children can only benefit from instruction when they are at school. Of the 50 sites that provided school records, 44 reported on absenteeism rates (total number of children who were absent or

⁸ Quality ratings were obtained by independent trained raters who were not part of the study.

⁹ Twenty-seven of the 47 Arkansas preschool sites provided ECERS-R scores for the 2005 evaluation.

unexcused more than 15 percent of the total school year). The total number of students with excessive absenteeism ranged from 0 to 37 students, with an average of eight students. As Figure 4 on following page shows, the rates of excessive absenteeism were significantly lower¹⁰ (Mean = 5 students) in mature 21C sites than in new 21C sites (Mean = 10 students).

Student Turnover

Rates of student turnover, that is the percentage of children newly enrolled or leaving out of the total student enrollment, represent another school-wide area in which the 21C program could have some impact. Although some turnover rates cannot be controlled, such as families moving for financial and personal reasons, an element of student turnover is controllable: Some families choose where to live and whether to move based on their feelings about the quality of the public schools. Since 21C provides needed services and outreach to parents, we expected mature sites to have lower turnover rates than their newer counterparts.

Of the 50 sites that provided school records, 47 collected student turnover rates. Yearly turnover rates ranged from 2 to 67 percent, with an average of 32 percent. As before, the numbers for the mature sites differed significantly¹¹ from their newer counterparts. As

Figure 5 shows, mature sites had an average turnover rate of 23 percent, whereas newer 21C sites had a significantly higher average turnover rate of 38 percent.

Reading at Grade Level

The percentage of students reading at grade level is a particularly important indicator of student academic status as it reflects both the school's and family's commitment to literacy and student achievement. 21C not only directly advocates for preschool and school-age literacy programs, it also provides an opportunity for families and schools to work together. The provision of high quality preschool associated with 21C also helps build the foundation of school readiness that is requisite for continued academic success. Therefore, we predicted that mature 21C sites would have a higher percentage of children reading at grade level.

Thirty-seven sites reported reading at grade level percentages, ranging from 16 to 97, with the average rate being 65 percent reading at grade level. Here, the mature sites differed marginally¹² from the new sites. At mature sites, 71 percent of the students were reading at grade level, whereas the newer sites had 61 percent of their students reading at grade level (See Figure 6 on pg. 17).

¹⁰ $t(42) = 2.02, p < .05$

¹¹ $t(45) = 2.12, p < .05$

¹² $t(35) = 1.76, p = .08$

Figure 4: Maturity and Absenteeism

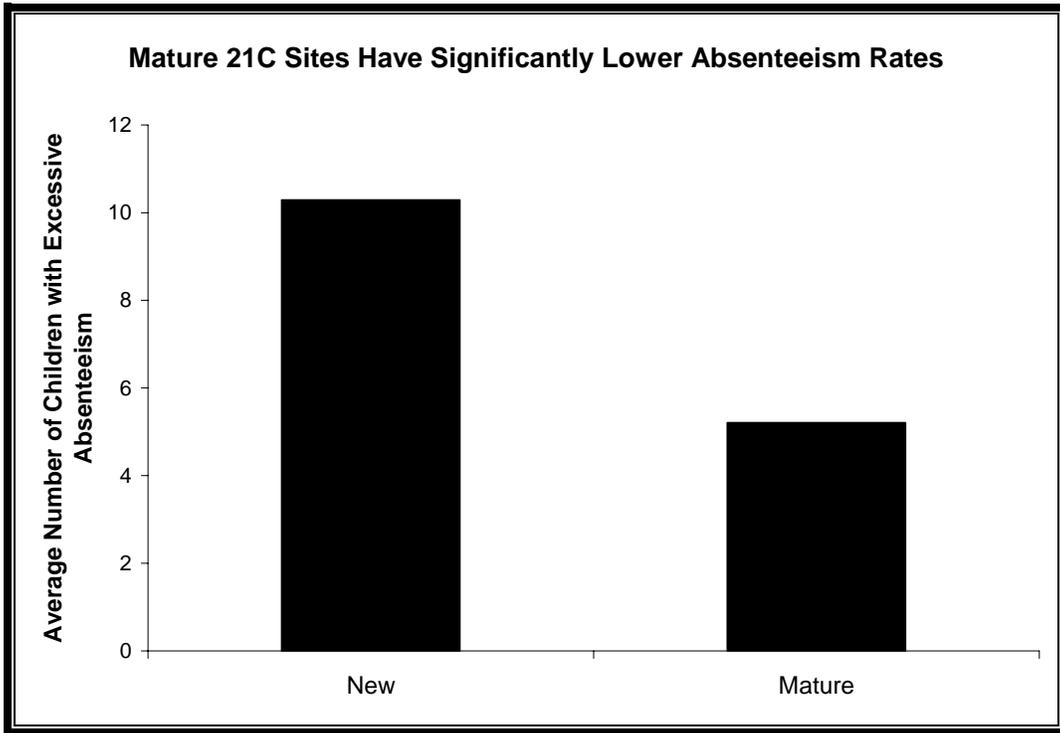
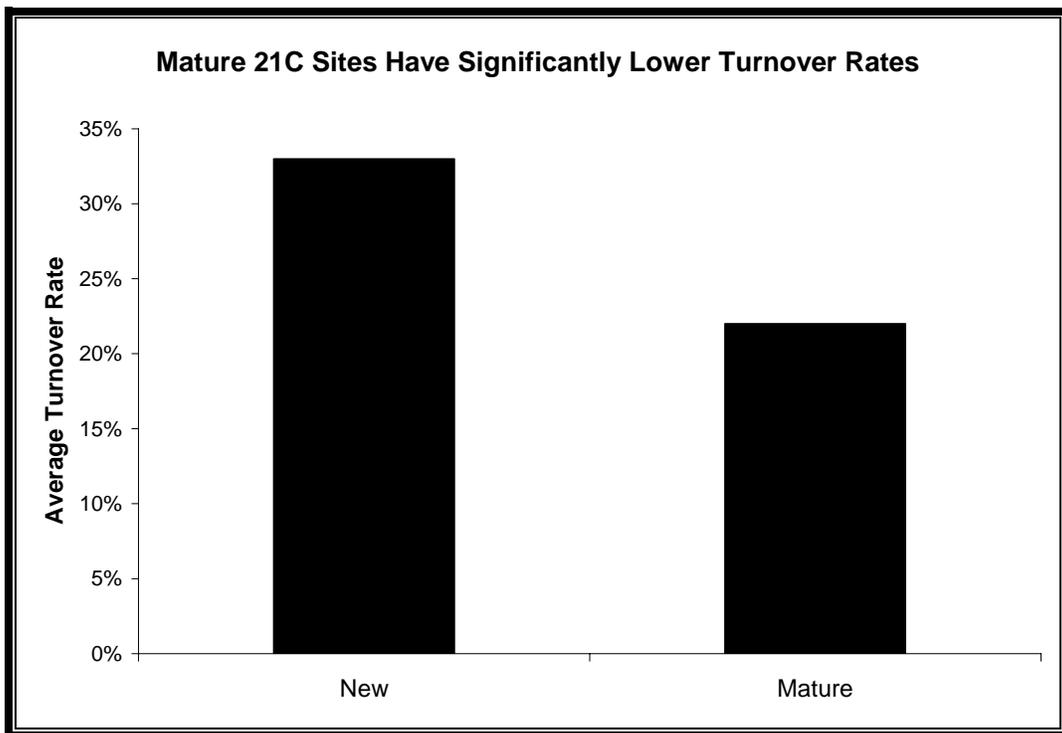


Figure 5: Maturity and Student Turnover



Problem Behaviors

In response to increasing problem behaviors in today's schools, 21C has evolved to address -- in addition to child care and family support -- mental health issues in schools. In a newly developed initiative, 21C schools are offered training and assistance on behavior issues. Additionally, the partnership established between the family and schools can prevent or help with the treatment of such issues within the school setting. Again, it was predicted that mature sites would have a lower level of suspensions.

We asked 21C sites to provide rates for indicators of problem behaviors: in-school and out-of-school suspensions. Although there was no effect of site maturity on in-school suspensions, there was an effect of maturity on out-of-school suspensions which are reflective of more serious behavioral problems than the in-school suspensions. Forty-seven sites reported between 0 and 57 out-of-school suspensions for the 2004 to 2005 school year, with an average rate of seven suspensions. Mature sites had a lower average of three out-of-school suspensions compared to the newer sites' average of 11 suspensions. Figure 7 on the following page illustrates this significant effect¹³ on out-of-school suspensions.

Presence of the ECE within the School

Researchers also explored the impact of having an early childhood education program in

the school. We compared all 21C sites with a preschool program to those without a preschool program. It should be noted, however, that children at sites without early childhood programs may have attended preschool elsewhere. Of the respondents, 32 elementary schools had both clearly answered the question of whether they had a preschool program on site and had completed their school record form.

Absenteeism

Having a preschool program within the school was significantly¹⁴ related to lower rates of kindergarten absenteeism within that same school. Schools without an on-site preschool had an average of five kindergarten children who were absent excessively versus those with an on-site preschool where, on average, only one kindergarten child was categorized as absent excessively. These results, as illustrated in Figure 8 on page 19, indicate that on-site early childhood education programs may have school-wide effects on attendance during elementary school. It may be the case that children who attend preschool form positive connections with the school, as do their families. This would become apparent in several areas, one of which would likely be their attendance to school, since attendance, among other things, reflects how much a child likes school.

¹³ $t(30) = 2.95, p < .01$

¹⁴ $t(23) = 3.35, p < .03$

Figure 6: Maturity and Reading at Grade Level

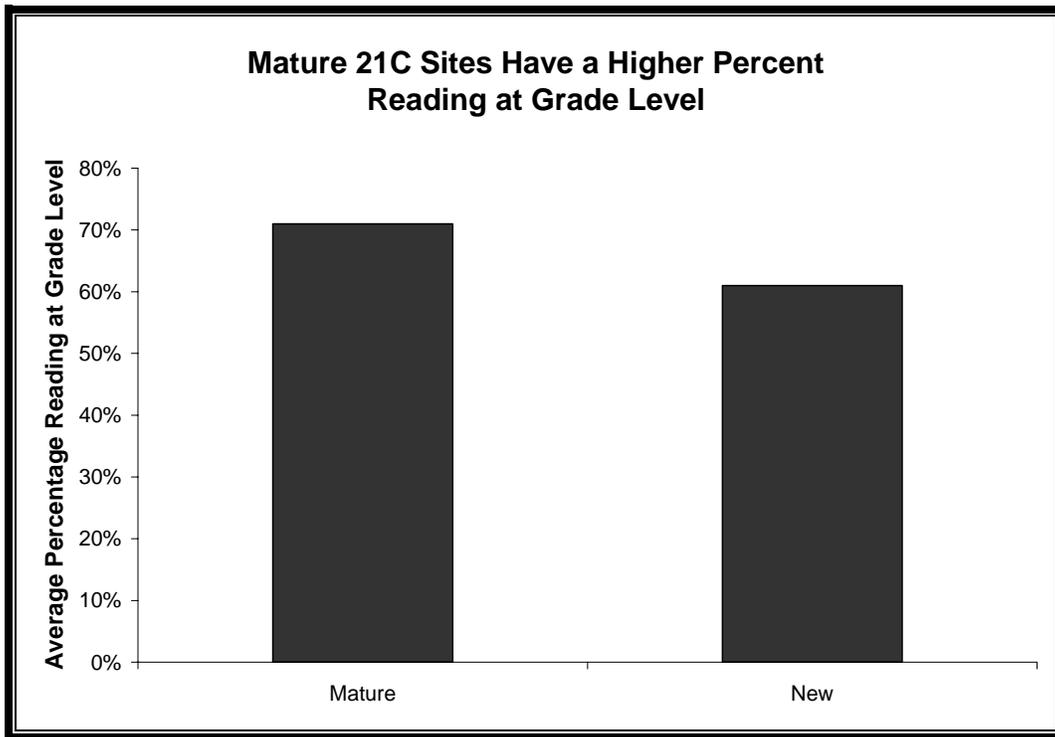
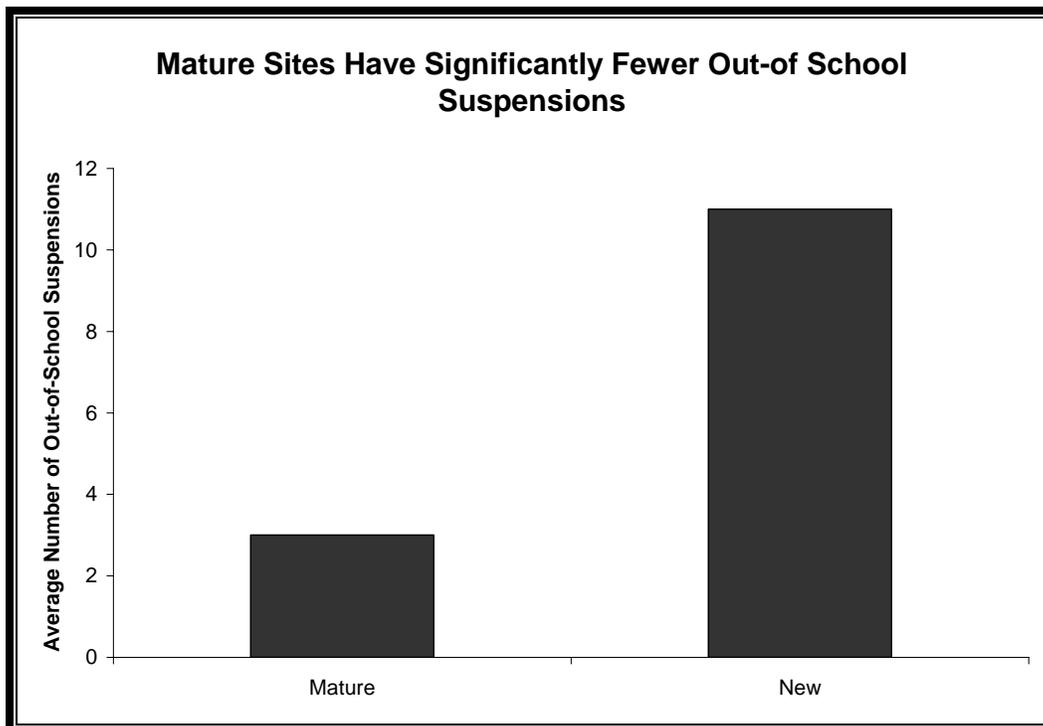


Figure 7: Maturity and Out-of-School Suspensions



Student Retention

Retaining students in their current grade can have a negative effect on their future academic performance and self-esteem. It also signifies academic problems. Early childhood education is thought to prevent later grade retention by ensuring the child is ready for school.

We note this effect within our data, as well (See Figure 9 on the following page). Schools with a preschool program on site were marginally less likely to retain children in kindergarten¹⁵ and significantly less in first grade¹⁶.

Special Education

Special education rates are important indicators of academic success. Although some children need special attention and services due to various disabilities, educators can prevent many learning problems with early identification and referrals for specific services. 21C's focus on prevention and its early childhood programs provide opportunities for early identification and referrals.

As illustrated by Figure 10 on page 20, having an AR21C preschool program was significantly related to a lower number of kindergarten¹⁷ special education students but not related to a lower number of special education students in first grade¹⁸.

Summary of AR21C Evaluation Findings

- The 21C preschool quality in Arkansas was exceptional.
- Schools that had implemented 21C longer benefited from significantly lower absenteeism rates, student turnover rates, and out-of-school suspensions. They also had marginally significant higher reading at grade level percentages.
- Having an ECE program within the school was associated with lowered absenteeism, fewer retentions, and fewer special education referrals.

¹⁵ $t(23) = 1.90, p < .07$

¹⁶ $t(24) = 2.13, p < .04$

¹⁷ $t(22) = 2.08, p < .04$

¹⁸ $t(21) = 0.83, p = .43$

Figure 8: ECE and Absenteeism

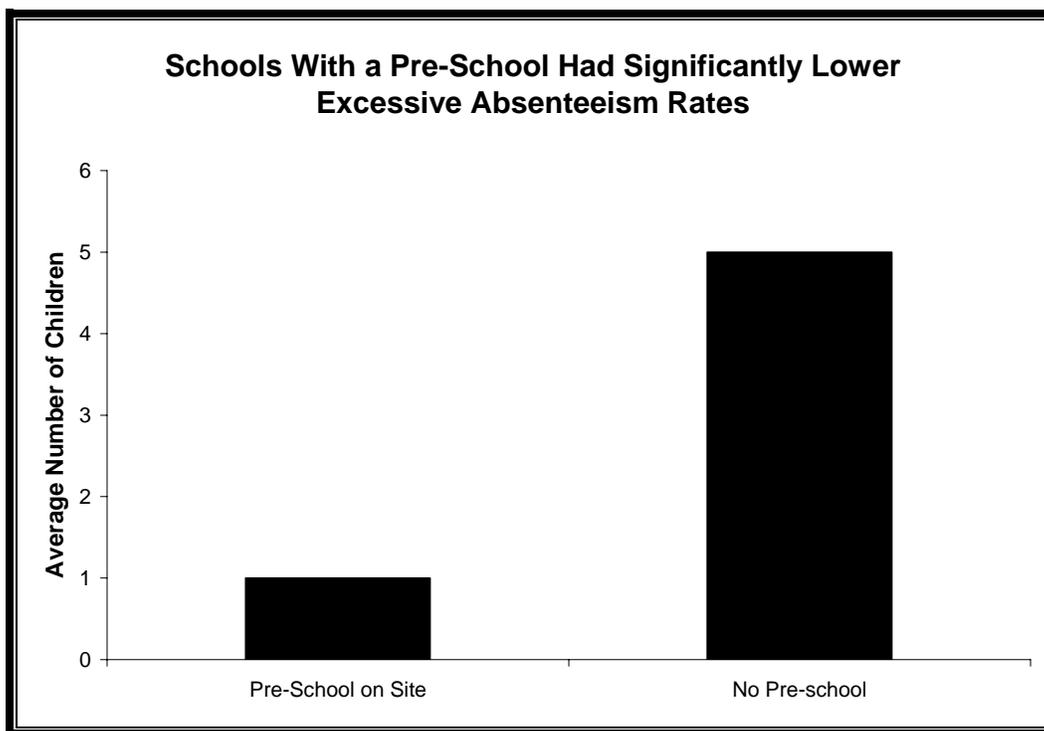


Figure 9: ECE and Grade Retentions

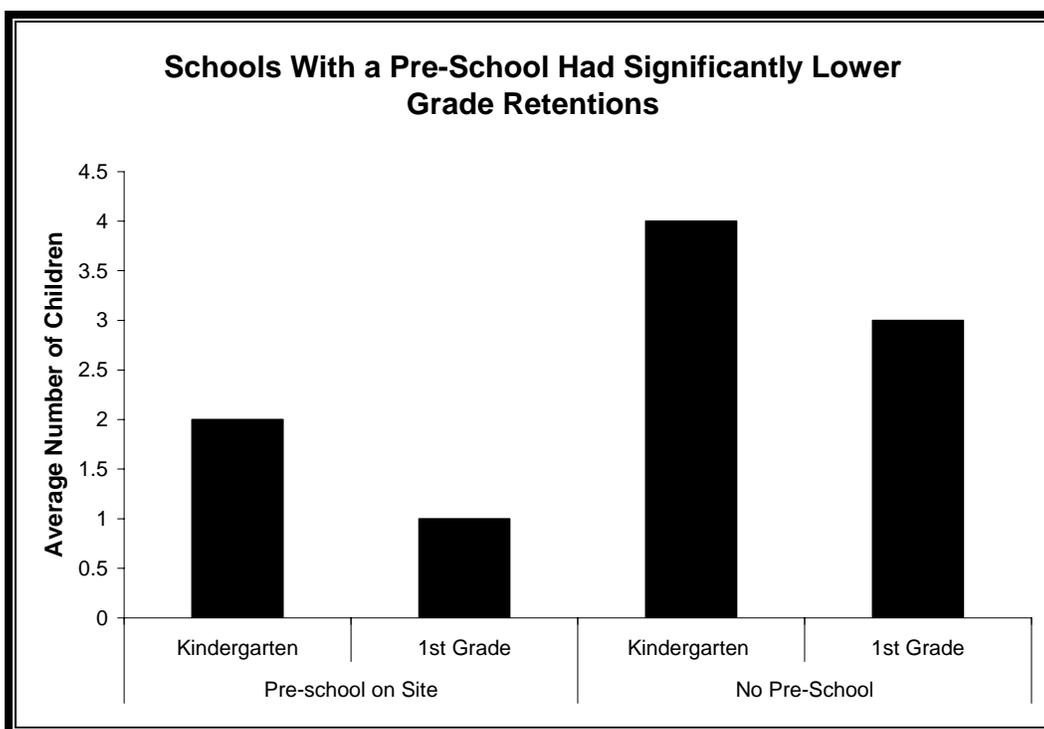
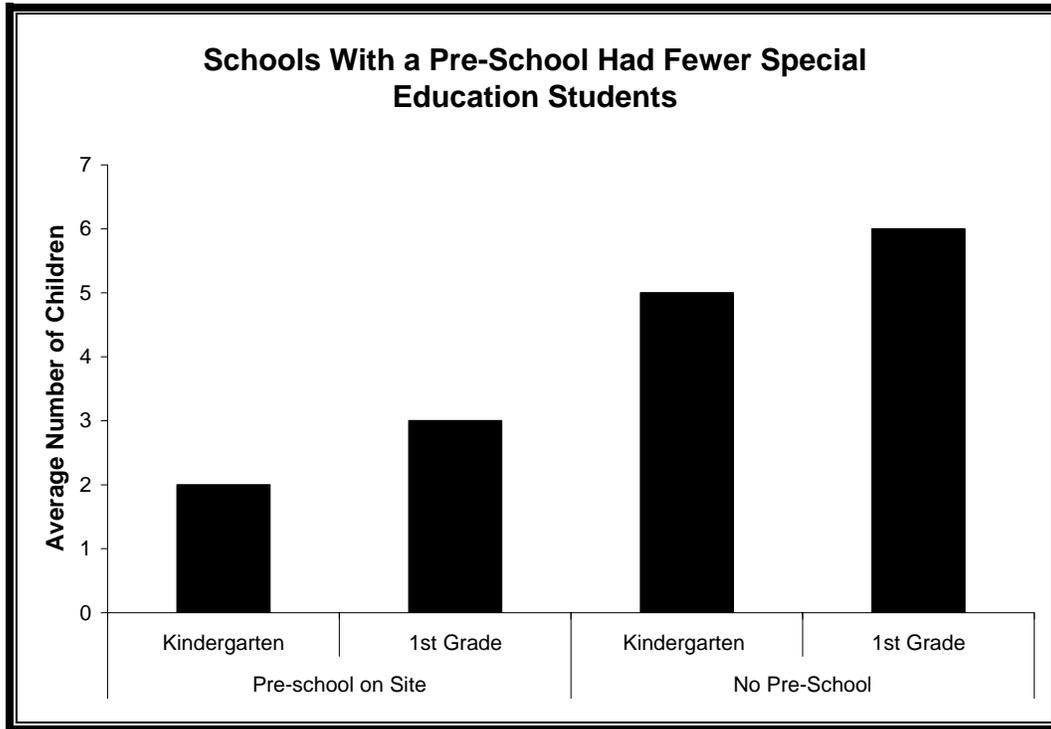


Figure 10: ECE and Grade Retentions



We received multiple comments from teachers and administrators on the perceived efficacy of the 21C program. Below is a selection of their comments:

As reported by a principal:

The 21C program has made a difference in the entire family of at least one four-year-old African-American boy, whom I will refer to as PJ. PJ was a part of this elementary school family even before he was born. His mother made frequent trips to the school throughout her pregnancy to address the needs of her daughter. I had taught the mother, who had a learning disability, in the sixth grade in an area elementary school. She was a withdrawn, precious child who was willing to work her heart out. Her family was extremely supportive. When the young mother had her own children, she was determined to do all in her power to assure that they would not be struggling learners. When the Pre-K program became available, PJ's mom immediately enrolled him and became a completely involved parent. She volunteered for everything and attended everything. She recently lost her job but used that disadvantage as an opportunity to return to school. She has begun her studies in Early Childhood Education. Because of her interest in her child and his education, PJ's mother accepted the responsibility of serving on the ABC/21C Advisory Committee. When "wonderful PJ" was promoted to kindergarten this week, one-third of the audience was his family, there to witness his proud moment. What a difference this program has made on all of our students, but a startling influence is evident in PJ and his family.

As reported by a principal:

During the school year, a father of three children moved into town. He needed to find the cheapest child care because he was supporting the whole family on his one salary. Because of the recent move and divorce, he had lost a lot of work. The Exemplary Child Learning Center, affiliated with SEACBEC (South East Arkansas Community Based Education Center) and the Warren School District (both 21C), offers the cheapest child care with quality approval status. He enrolled his three young children—ages 0 to 3—and started to work. Our hours were convenient to his job and we were soon able to point him towards some available resources. Our family functions were a creative outlet to meet new people and socialize with other families. He attended all of these functions. He says that his "daycare" has given him more than just "babysitting." He has learned a lot from the information, flyers, classes, and brochures we have given him. "Without this daycare," he says, "he would be left struggling by himself."

Conclusions

The findings from both evaluation studies support the view that quality early childhood education can indeed be successfully implemented in public schools. Early childhood programs can help to improve individual children's academic achievement, as well as the entire school as a whole. Although the implementation of such programs is not without its struggles, good leadership and teamwork on the part of the building principal and others in the school district can overcome these difficulties.

The provision of early childhood education and child care is clearly a worthwhile investment for public schools. This point is especially evident in the AR21C evaluation. 21C is a broad program, including various services provided from the birth of the child to age 12. When we studied outcomes in AR21C schools, however, it was clear that those with 21C preschool programs yielded more positive findings than those without preschool. Additionally, we found in both the National Evaluation and the AR21C evaluation, that 21C has a better chance of yielding positive student outcomes if the early childhood program is integrated and becomes part of the very structure of the school.

21C serves as a model for school-based programs and an illustration for the successful integration of preschool and elementary school. When implemented well, 21C can facilitate the

integration of high quality, developmentally appropriate early childhood education into public elementary schools. As the trend towards offering ECE through public elementary schools continues, many schools will need a model on which to base the implementation and evaluation of their efforts. The Schools of the 21st Century program stands to lead the way in assuring high quality education in preschool and elementary school for diverse groups of children.

One key lesson in the course of evaluating 21C is that implementation of the program takes time. We noted this in our findings and other research on school reform.^{xx} In the National Evaluation, indicators of quality were better in Year 2 than in Year 1. In the AR21C study, the mature 21C sites had more positive outcomes than the newer ones. As more schools implement early childhood programs, two policy points need to be kept in mind: One, schools need to be given time, as well as assistance and resources, to sustain the implementation for several years so that the programs have an opportunity to develop. Two, although program evaluation should begin in year one of implementation and include a process part indicating what is being implemented and how, no program should be evaluated for outcomes until it has achieved stability and, in the words of David Campbell^{xxi}, "the program is proud."

Endnotes

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