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ABSTRACT

This longitudinal study examined the extent to which developmentally appropriate practices of teaching and evaluation are accepted and implemented in primary schools and the relationship of teacher educational background and experience with the use of these practices. Data were obtained from the Early Childhood Longitudinal Study kindergarten class of 1998-1999. The research design was guided by an ecological systems perspective, in which the child's physical, cognitive, and socio-emotional development are considered across multiple contexts. The total sample was comprised of 3,047 kindergarten teachers from public and private schools. Findings revealed that half-day teachers spent 3.5 hours and full-day teachers spent 5 hours per day in instructional activities. Half- and full-day teachers spent similar proportions of time in different grouping arrangements, with teacher-directed whole-class grouping comprising the greatest portion of the instructional day. Numerous differences were reported between public and private elementary schools, including proportion of time in teacher-directed whole-class instruction. The majority of kindergarten teachers reported having several activity centers in their classrooms, with differences related to type of school (public versus private), teachers' education level, and teachers' certification area. Teachers were more likely to favor ratings that compared a child's performance with prior performance and that evaluated a child's effort over ratings that compared performance with peers or outside standards. Only type of school (public versus private) was related to type of student evaluation preferred by the teacher. (Contains 12 references.) (KB)

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Kindergarten Teachers' Use of Developmentally Appropriate Practices: Results from The Early Childhood Longitudinal Study, Kindergarten Class of 1998-1999

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This paper focuses on the types of teaching and evaluation practices that America's kindergarten teachers use in their classrooms. The prevalence of a variety of instructional practices is described including the use of teacher-directed and child-selected activities, grouping practices and activity centers. In addition, the paper describes the emphases kindergarten teachers place on various criteria for evaluating child performance. And, kindergarten teachers' practices and their use of instructional and assessment strategies is compared for teachers with varying levels of experience, education and certification.

Background

In response to national concern about teaching practices in kindergarten, the National Association for the Education of Young Children (NAEYC) issued a revised position statement providing guidelines on developmentally appropriate practices for teaching young children (1996) which updated their often cited initial paper on such practices (Bredekamp 1987). And, the NAEYC, in conjunction with the International Reading Association (IRA) issued a position statement specifically about developmentally appropriate practices for teaching reading and writing to young children (1998). The principles and recommended practices for teaching young children, including kindergarten-age children, found in these documents focus on approaches that, through many years of research, have shown to best promote young children's learning.

The use of a variety of grouping strategies, including individualized instruction, small group activities and a limited amount of whole class activities is promoted. For example, having children work in small groups on projects allows students to develop understanding through hands-on interaction with materials as well as provides them with the opportunity to interact with peers and adults. The guidelines for developmentally appropriate practices also emphasize a balance of child-initiated and adult-directed activities. Whole class, teacher-directed instruction is not recommended as the dominant method in the classroom, as it does not meet the needs of children with differing abilities or shorter attention spans (Shepard & Smith 1988) and does not provide the best setting for engaging children in experiences that make academic content most accessible and meaningful (IRA & NAEYC 1998).

Kindergarten teachers are encouraged to create a classroom environment that allows children opportunities for hands-on, meaningful experiences. Young children learn by doing, constructing their knowledge of the world by interacting with it. It is widely accepted in the early childhood profession that classrooms should include interesting materials and objects that are easily accessible to children (NAEYC 1996; IRA & NAEYC 1998; Shore 1998). For example, comfortable and attractive book corners can promote the time children spend with books within the classroom (Neuman & Roskos 1997). And, classroom areas devoted to math activities with plenty of manipulatives offer kindergarten children experiences with materials which helps them move from the concrete to the abstract as they develop their mathematical problem solving skills. The opportunity for direct modeling with manipulatives serves as the necessary foundation of mathematical problem solving (Carpenter, Ansell, Frank, Fennema, & Weisbeck 1993).

In conjunction with developmentally appropriate teaching strategies, it is essential that teachers assess students appropriately. Accurate assessments enhance teachers' understanding of individual children's abilities and needs which, in turn, allows teachers to effectively tailor instruction in ways that

best promote continuous gains in achievement (IRA & NAEYC 1998). The National Education Goals Panel (Shore 1998) recommends that assessment practices take into account a wide range of behaviors and competencies, rather than focusing on test scores alone. An NAEYC's 1990 position statement on appropriate assessment practices recommends that assessment procedures should evaluate all domains of learning and development, including social, emotional, and physical development, in addition to cognitive growth and attainment. Assessments of specific academic areas, especially for young children, are most useful when they are tied to meaningful activities. For example, appropriate literacy assessment in the classroom "should be anchored in real-life writing and reading tasks and continuously chronicle a wide range of children's literacy activities in different situations (IRA & NAEYC 1998).

A recent NCES report referred to professional preparation and teaching experience as important indicators of teacher quality (Lewis, Parsad, Carey, Bartfai, Farris & Smerdon 1999).
Other research has found connections between teacher experience, education and the use of developmentally appropriate practices. A recent report on kindergarten through twelfth grade teachers indicated that teachers with more experience were less likely to use developmentally appropriate practices and more likely to use more traditional approaches in their teaching. And, it has been found that teachers with more advanced degrees used some recommended practices more often than teachers with less education (Henke, Chen, Goldman, Rollesfson, & Gruber 1999).

The degree to which developmentally appropriate practices of teaching and evaluation are accepted and how they are implemented in the nation's primary schools is unknown. Furthermore, data on the relationship of teacher educational background and experience with the use of these practices is of great interest to educational researchers. This paper aims to describe the prevalence of teachers' use of many of these practices and relate their use to traditional measures of teacher quality. The following research questions guided the analyses presented in this paper.

1. How much time do kindergarten teachers spend in teacher-directed and child-selected activities? What proportion of the time do teachers spend in various grouping arrangements for instruction (e.g., whole class teacher-directed, child-selected activities)?
2. How do kindergarten teachers provide an environment that is conducive to learning and exploration?
3. What evaluation criteria do kindergarten teachers perceive are the most important for assessing children's progress?

Method

Information on teacher characteristics, instructional practices, and evaluation methods come from the Early Childhood Longitudinal Study, Kindergarten Class of 1998-1999 (ECLS-K).[1] In the fall of 1998, the U.S. Department of Education's National Center for Education Statistics (NCES) embarked on a study of the education of young children. Data were collected by its contractor, Westat Incorporated. The Early Childhood Longitudinal Study, Kindergarten Class of 1998-1999 captures information on children, their families, their teachers, and their schools. The design is guided by an ecological systems perspective, in which the child's physical, cognitive and socio-emotional development are considered across multiple contexts, including home, school, and community.

Data in this report come from the 1998 Fall ECLS-K Teacher Survey. The total sample yield for the kindergarten teachers was 3,047, with 2,684 public and 363 private school teachers. All kindergarten teachers within 1,018 participating schools were asked to take part in the study in the 1998-1999 school year, even if they did not have any students in their classroom who were involved in the study. Thus, the

[1] U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998-1999, Fall 1998

data are representative of the population of kindergarten teachers across the United States. The fall kindergarten teacher instrument included three self-administered, paper and pencil questionnaires. This paper focuses on data from the first two teacher questionnaires on classroom characteristics, classroom organization and activities, teachers' educational background and their views on readiness, school climate, and school environment[2].

Data for this paper have been weighted to national estimates of kindergarten teachers (table 1). The standard errors of estimates have been calculated using WESVAR statistical software and jackknife replication, which take into account the complex sampling used in the ECLS-K study. All comparisons noted in this report are statistically significant at the .05 level or better, based on t-tests adjusted for multiple comparisons using the Bonferonni adjustment. However, only those statistically significant comparisons of substantive importance are presented in the paper.

Table 1 presents information on the characteristics of the teachers and the schools and classrooms in which they teach. In general, most of the kindergarten teachers teach full-day kindergartens, have three or more years of teaching experience, have a bachelor's degree or higher, and are certified in early childhood or elementary education.

[2] The third fall teacher questionnaire collects data at the child level, with teachers completing one questionnaire per sampled child.

Table 1. – Number and percentage of kindergarten teachers in the ECLS-K sample, and estimated number and percentage in the U.S., by school and teacher characteristics: Fall 1998

Characteristic	National estimates	
	Number	Percent
All kindergarten teachers	190,400	100
School type		
Public	151,700	80
Private	38,600	20
Catholic	10,000	5
Non-Catholic	28,600	15
School location		
Large city	34,900	18
Midsize city	35,900	19
Suburbs/large town	76,000	40
Small town	18,000	9
Rural	25,700	14
Percent minority in class(es)[3]		
Less than 10	48,600	29
10 to 24	30,500	18
25 to 49	27,600	16
50 to 74	20,400	12
75 or more	42,200	25
Teaching assignment		
Full-day class	115,800	61
A.M. and/or P.M. class	73,700	39
Years of kindergarten teaching experience		
Less than 3	56,600	30
3 to 9	66,000	35
10 to 19	46,100	24
20 or more	19,000	10
Highest education level		
Less than bachelor's degree	4,400	2
Bachelor's degree	114,300	60
Master's degree	52,900	28
Education specialist/Doctorate degree	11,000	6
Area of teaching certification		
Elementary education only	76,500	40
Early childhood education only	20,800	11
Elementary and early childhood education	76,400	40
Neither area of certification	7,900	4

NOTE: Percentages may not add to 100 because of rounding, and details may not add to totals because of rounding for weighted estimates.
SOURCE: Early Childhood Longitudinal Study, Fall Kindergarten Teacher Questionnaires, U.S. Department of Education, National Center for Education Statistics, 1998.

[3] If a kindergarten teacher taught more than one class (e.g., a.m. class and p.m. class) the percent minority was averaged across the two classrooms.

Findings

How much time do kindergarten teachers spend in teacher-directed and child-selected activities? What proportion of the time do teachers spend in various grouping arrangements for instruction?

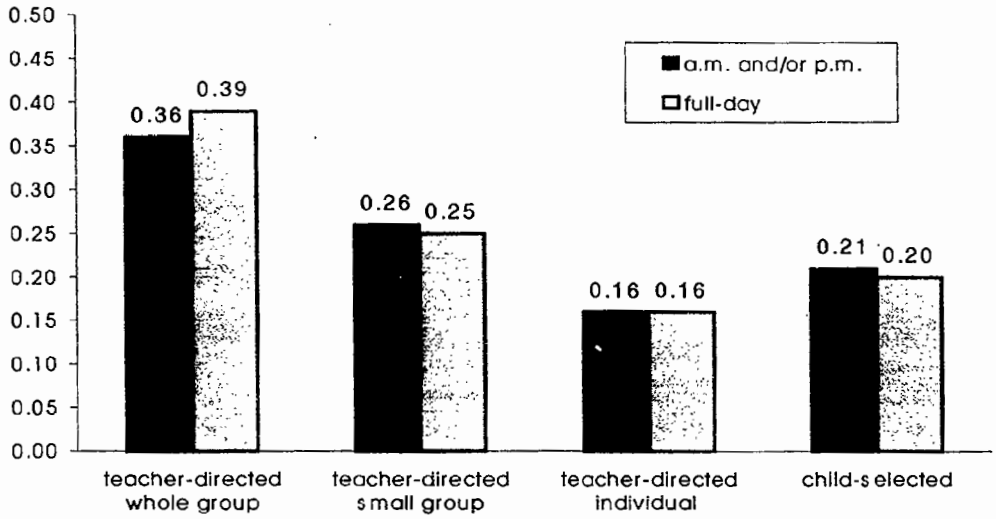
Classroom instruction is often delivered through a variety of approaches; teaching to the whole class, teaching to small groups of children, teaching individual children, and children choosing learning activities designed by the teacher. Teachers were asked to indicate the amount of time the class spent in teacher-directed instruction and child-selected activities in a typical day. For this report, the proportion of time spent in each of the four types of teaching practices was calculated by dividing the amount of time spent on each practice by the sum total of the time reported spent across the four types of activities.[4]

The average total instructional time and proportion of time spent between the types of teacher-directed and child-selected activities are shown in tables 2 and 3 (see appendix). Table 2 presents the proportion of time spent by teachers working in morning and afternoon classes (part-day), while table 3 displays the data for teachers in all-day kindergartens. On average, teachers of morning or afternoon kindergarten kindergartens spend 3.5 hours and teachers of all-day kindergartens spend 5 hours in instructional activities. While no statistically significant differences in instructional time were observed among teachers in morning and afternoon kindergartens, full-day teachers with less than 3 years of kindergarten teaching experience reported spending less time across the four instructional practices than teachers with 20 or more years of experience (4.8 hours vs. 5.2 hours, respectively).

The proportion of time kindergarten teachers reported spending in various grouping practices were examined by teaching assignment (figure 1) and also by various teacher characteristics to see whether kindergartners in different classrooms have similar exposure to teacher-directed whole class, small group, and individual learning experiences and child-selected activities (tables 2 and 3 in appendix).

[4] Using the sum of the time across the four teaching practices does not take into account the fact that teachers may use more than one grouping practice simultaneously, and thus may not always provide times that are mutually exclusive when reporting. However, the average total amount of time reported by teachers is very similar to the amount of daily instructional time reported by teachers in another part of the survey.

Figure 1. – Proportion of time spent in different grouping practices, by teaching assignment



NOTE: Teachers may have reported an overlap in time, due to the fact that more than one grouping activity could be taking place in the classroom simultaneously. Percentages may not add to 100 because of rounding, and details may not add to totals because of rounding for weighted estimates.

SOURCE: Early Childhood Longitudinal Study, Fall Kindergarten Teacher Questionnaires, U.S. Department of Education, National Center for Education Statistics, 1998.

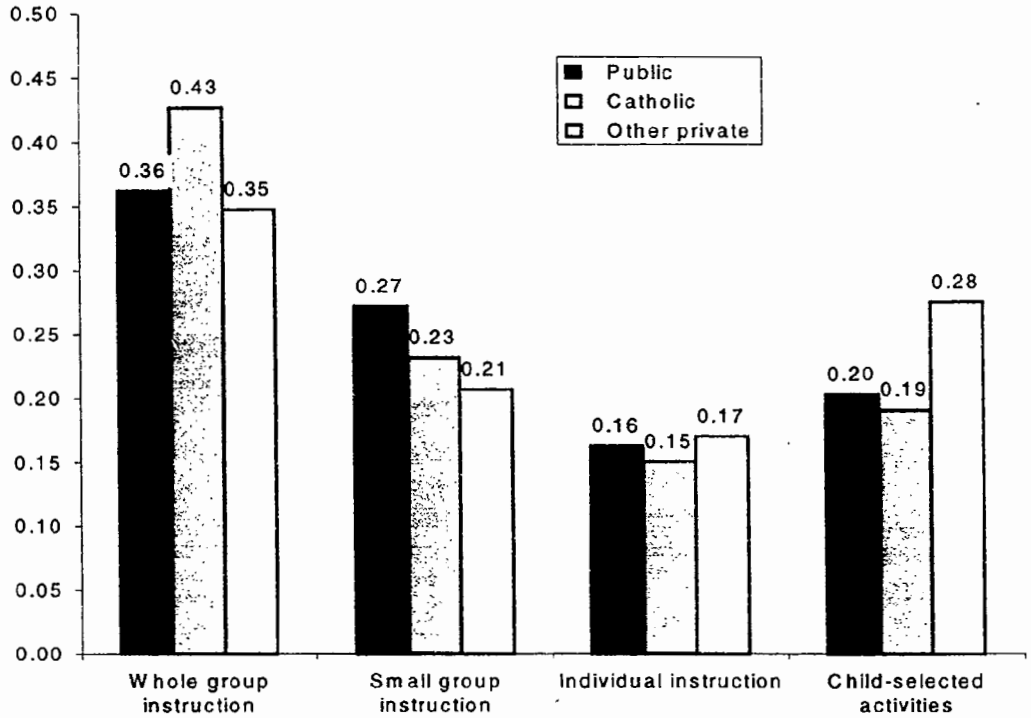
Overall, kindergarten teachers working in both part-day and full-day teaching assignments reported spending similar proportions of time in different grouping arrangements. Kindergarten teachers in part-day and full-day classrooms both report using teacher-directed whole class grouping for the greatest portion of the instructional day (0.36 to 0.39, respectively). They reported spending about a quarter of their day in teacher-directed small group instructional settings, about a fifth of the instructional day in child-selected activities, and 16 percent of their day in teacher-directed individual instruction. Altogether, kindergarten teachers spend over 60 percent of their day in small group and individual teacher-directed and child-selected instruction.

School Type

Public and private elementary schools differ from each other in a number of ways. For example, more children in public schools than children in private schools participate in programs and services for at-risk children such as English as a second language (4.75 percent vs. 0.45 percent) and remedial reading programs (13.46 percent vs. 7.22 percent). Almost all teachers in public schools (99 percent) have a baccalaureate or higher degree compared with teachers in private schools (91 percent) (NCES 1999).

Kindergarten teachers working in different types of schools tended to vary the amount of time they spent on different grouping practices. Figure 2 shows the proportion of time public, Catholic, and other private school kindergarten teachers reported spending in different grouping practices. Figure 2 only shows the proportion of time spent in different instructional grouping practices for teachers working in part-day classrooms; however, results for teachers working in full-day classes are for the most part similar (see table 3 for full-day classroom proportions).

Figure 2. – Proportion of time in part-day classrooms spent in different instructional grouping practices, by school type



NOTE: Teachers may have reported an overlap in time, due to the fact that more than one grouping activity could be taking place in the classroom simultaneously. Percentages may not add to 100 because of rounding, and details may not add to totals because of rounding for weighted estimates.

SOURCE: Early Childhood Longitudinal Study, Fall Kindergarten Teacher Questionnaires, U.S. Department of Education, National Center for Education Statistics, 1998.

Catholic school kindergarten teachers tended to spend a greater proportion of their instructional time in teacher-directed, whole class instruction than public school kindergarten teachers (0.43 vs. 0.36 in part-day classrooms, 0.48 vs. 0.38 in full-day classrooms). Public kindergarten teachers spent a greater proportion of the instructional day in small group instruction in comparison to Catholic school teachers (0.27 vs. 0.23 in part-day classes, 0.26 vs. 0.22 in full-day classes) and to non-Catholic private school teachers working in part-day classes (0.27 vs. 0.21). In part-day kindergarten classrooms, non-Catholic private school teachers reported spending the greatest proportion of time on child-selected activities (0.28 vs. 0.19 for Catholic and 0.20 for public teachers).

Catholic school kindergarten teachers working in full-day classes also spent a greater amount of time in whole class, teacher-directed instruction in comparison to non-Catholic, private school kindergarten teachers (0.48 vs. 0.39). In full-day kindergarten classrooms, Catholic school teachers spent less of the instructional day on teacher-directed individual instruction (0.13 for Catholic vs. 0.16 for public and 0.18 for non-Catholic private teachers) and on child-selected activities (0.17 for Catholic vs. 0.20 for public and 0.23 for non-Catholic private teachers) than other teachers.

For the most part, teachers with different levels of kindergarten teaching experience, educational attainment, and teaching certifications reported spending similar proportions of time in various grouping

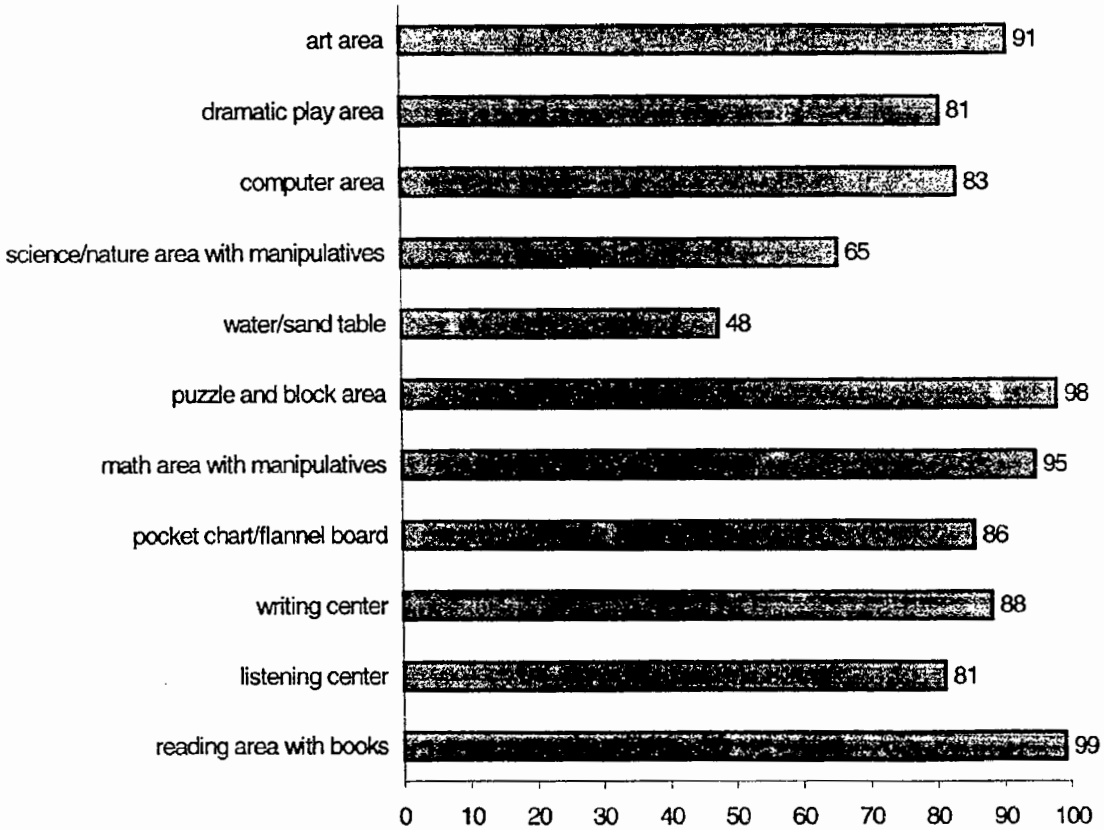
practices. However, kindergarten teachers in full-day classes who only held an elementary education certificate reported using child-selected activities for a smaller extent of time than teachers who had only an early childhood certification, or those who held both an early childhood and an elementary education certification (0.19 vs. 0.23 for early childhood certification and 0.21 for both certifications). Also, teachers working in part-day classrooms who held only an elementary education certificate reported spending a larger proportion of the instructional day on small group instruction than teachers who held only a certificate in early childhood education.

How do kindergarten teachers provide an environment that is conducive to learning and exploration?

Kindergarten teachers provide their students opportunities to explore and learn through a variety of individual activities and grouping practices. In addition to teacher-directed instruction, teachers use centers to provide children with options from which they can choose activities to explore on their own or with others. Learning centers or areas allow children to choose an activity, explore, and learn independently or in small groups. For example, a science center may include a variety of instruments and manipulatives such as microscope slide samples, magnifying glasses, magnets, or a water/sand table. Children may choose from one or two activities designed by the teachers to explore and learn about a scientific concept by themselves or with another child. The ECLS-K teacher questionnaire asked kindergarten teachers to identify the types of centers and areas available to the children in their classrooms. The percentage of kindergarten teachers having each type of activity center in their classroom is shown in figure 3.

The majority of kindergarten teachers reported having several activity centers in their classrooms. Out of eleven listed activity centers, teachers reported on average that they had about 9 of the listed centers in their classrooms. Almost all kindergarten teachers report having reading areas with books, puzzle and blocks, and math areas with manipulatives. Fewer teachers reported having activity centers and areas that are associated with science-related activities, such as water/sand tables (48 percent) and science and nature areas with manipulatives (65 percent).

Figure 3. – Percentage of teachers reporting that they have various activity centers in their classrooms



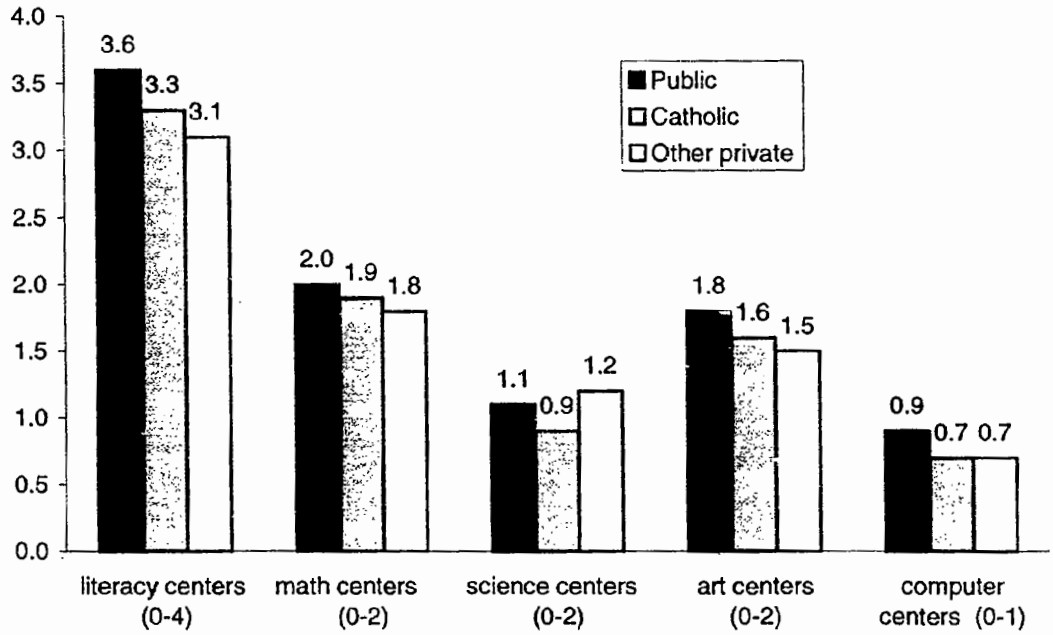
SOURCE: Early Childhood Longitudinal Study, Fall Kindergarten Teacher Questionnaires, U.S. Department of Education, National Center for Education Statistics, 1998.

Teachers often have more than one activity center or area to provide enrichment and practice within a specified content area. For this report, the activity centers were grouped into five content areas: literacy, math, science, art, and computers. Activities that provide enrichment and practice in reading such as reading areas with books, listening centers, writing centers, and pocket charts or flannel boards composed the literacy group. Both math areas with manipulatives and puzzle and block centers were grouped together as math centers. The water/sand table and a science or nature area with manipulatives represent opportunities to engage in science inquiry. Art included both dramatic play areas and art areas. The computer center remained as a separate content area. Thus, kindergarten teachers could report using between zero and four literacy centers, zero to two centers in math, science, and art, and zero to one center in computers. The mean number of centers used within each content area was calculated and compared by teacher characteristics.

School Type

The average number of centers in content areas differed by school type, with public kindergarten teachers reporting that they have more activity centers for each of the content areas (figure 4).

Figure 4. – Average number of centers in classroom for each content area, by type of school



SOURCE: Early Childhood Longitudinal Study, Fall Kindergarten Teacher Questionnaires, U.S. Department of Education, National Center for Education Statistics, 1998.

Public school kindergarten teachers reported having the most literacy centers (3.6 centers vs. 3.3 Catholic and 3.1 other private school teachers), math centers (2 vs. 1.9 for Catholic and 1.8 for other private), art centers (1.8 vs. 1.6 for Catholic and 1.5 for other private school teachers) and computer centers (0.9 vs. 0.7 centers for Catholic and other private). In addition, Catholic school kindergarten teachers reported having fewer science centers than other private school kindergarten teachers (0.9 vs. 1.2 centers, respectively).

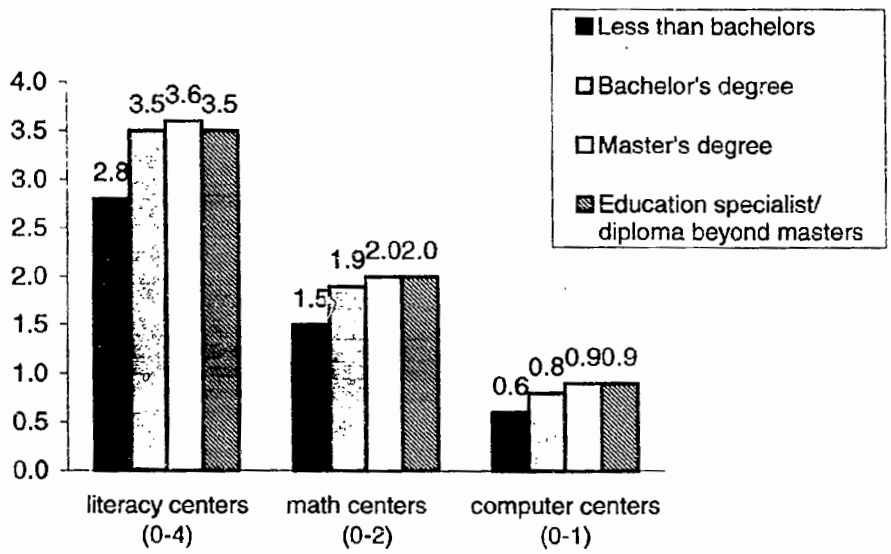
A technology-rich environment can support education initiatives focused on improving learning outcomes. One of the first steps to introducing technology to students is to incorporate computers into the classroom instruction. The availability of computers in classrooms would help expand their use by non-traditional groups of users such as girls and children from low-income families. Not surprisingly, public school kindergarten teachers are more likely to have a computer center in their classrooms compared with teachers in Catholic and other private schools. In 1995, public schools on average reported almost three times the number of computers in the school as did private schools (72 vs. 24 computers per school) (Heaviside et al. 1997).

Highest Level of Education

The number and types of centers in the classroom are related to teachers' education levels. Few kindergarten teachers (2 percent) reported having earned less than a bachelor's degree. About 84 percent of these teachers without any postsecondary degrees were working in non-Catholic private schools. In addition, almost half (46 percent) of the kindergarten teachers with less than a bachelor's degree reported that they held neither an early childhood nor elementary education certification.

Kindergarten teachers with less than a bachelor's degree were more likely to report having fewer literacy centers than teachers with a master's or higher degree (figure 5). Kindergarten teachers with less than a bachelor's degree reported having 2.8 literacy centers, compared to teachers with a master's or higher degree with 3.6 literacy centers in their classrooms. Also, those with less than a bachelor's degree had the fewest math centers in their classroom in comparison with all other kindergarten teachers (1.5 centers vs. 1.9 to 2.0 centers for master's and education specialists/recipients of higher than a master's diploma). Kindergarten teachers with a bachelor's or lower level of education reported having fewer computer centers in their classrooms than teachers with a master's or higher degree (0.6 and 0.8 centers vs. 0.9 centers). Similar patterns were noted in the other content area centers; however, due to the small sample size of teachers with less than a bachelor's degree, the standard errors are relatively large.

Figure 5. – Average number of literacy and math areas used in classrooms, by teachers' highest level of education

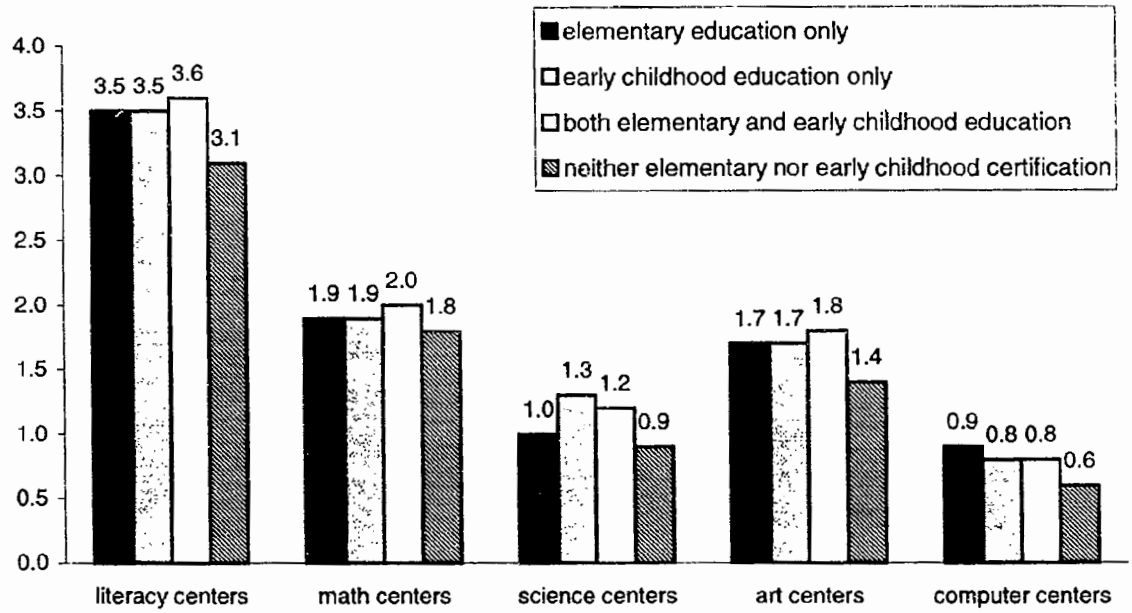


SOURCE: Early Childhood Longitudinal Study, Fall Kindergarten Teacher Questionnaires, U.S. Department of Education, National Center for Education Statistics, 1998.

Teacher Certification

Kindergarten teachers' use of activity centers was also examined in relation to the area of teaching certification. Having literacy, math, science, arts, and computer centers differs by the teachers' area of certification (figure 6).

Figure 6. – Average number of centers in classroom for each content area, by teachers' area of certification



SOURCE: Early Childhood Longitudinal Study, Fall Kindergarten Teacher Questionnaires, U.S. Department of Education, National Center for Education Statistics, 1998.

Kindergarten teachers who did not have a teaching certification in early childhood or in elementary education reported using the fewest activity centers in their classrooms, in all content areas. They reported having 3.1 literacy centers on average, in comparison with 3.5 to 3.6 centers used in other teachers' classrooms. Teachers certified in either elementary or early childhood education or both areas reported using almost 2 math centers, on average, in their classes, as compared to teachers with neither certification who reported using 1.7 math centers in the classrooms. Those with early childhood or both early childhood and elementary education reported using more science centers than teachers with only an elementary education certification or those with neither education certification (1.3 and 1.2 centers vs. 1.0 and 0.9 centers, respectively). Kindergarten teachers certified in either elementary education, early childhood education, or both areas reported using 1.7 to 1.8 art centers, while those with no certification in either early childhood education or elementary education reported using 1.4 art centers. Finally, teachers with neither certification were less likely to have a computer center in their class in comparison with those who had an elementary education and/or early childhood certificate (0.6 centers vs. 0.9 and 0.8 centers).

Differences in the use of activity centers were also explored in terms of years of kindergarten teaching experience; however, no statistically significant differences were observed (table 5 in appendix).

What evaluation criteria do kindergarten teachers perceive are the most important for assessing student progress?

The criterion teachers use for evaluating performance hinge on value judgements and the philosophical point of view one espouses influences the approach teachers use to evaluate students (Terwillinger 1977). Kindergarten teachers in the ECLS-K were provided with a list of evaluation criteria and asked to rate the importance of each criterion in evaluating their students. Table 4 shows the

percentage of teachers who rated each criterion as very or extremely important for evaluating kindergartners.

Table 4. - Percentage of kindergarten teachers reporting that various criteria are very or extremely important in evaluating kindergartners

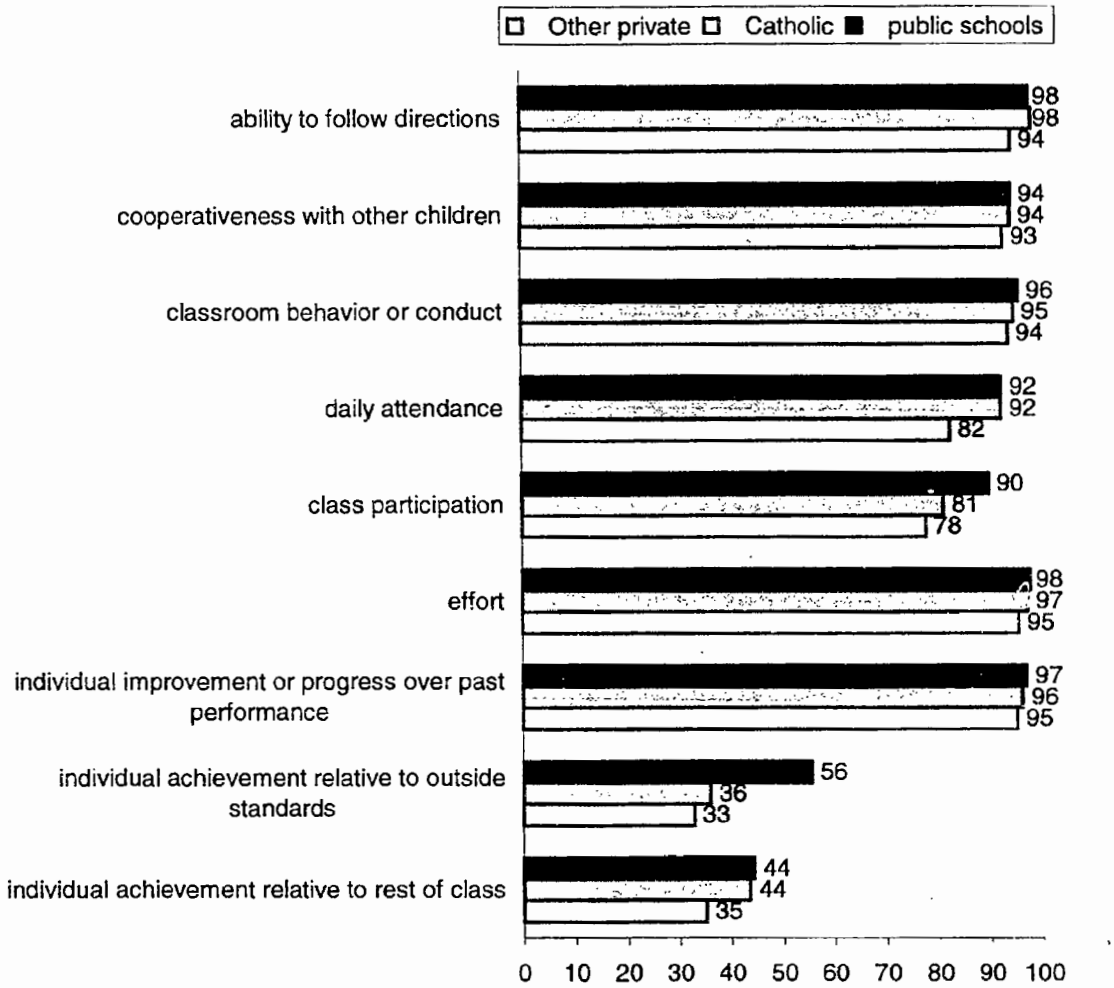
Evaluation criterion	Percentage
Individual achievement relative to rest of class	43
Individual achievement relative to outside standards	51
Individual improvement or progress over past performance	97
Effort	97
Class participation	87
Daily attendance	91
Classroom behavior or conduct	95
Cooperativeness with other children	94
Ability to follow directions	97

SOURCE: Early Childhood Longitudinal Study, Fall Kindergarten Teacher Questionnaires, U.S. Department of Education, National Center for Education Statistics, 1998.

Kindergarten teachers are more likely to favor ratings that compare a child's performance with the child's past performance, and that evaluate a child's effort over ratings that compare performance with their peers or outside standards. The evaluation criteria rated as very or extremely important by nearly all kindergarten teachers included: effort (97 percent), ability to follow directions (97 percent), individual improvement or progress over past performance (97 percent), classroom behavior and conduct (95 percent), and cooperativeness with other children (94 percent). Kindergarten teachers rated individual achievement relative to the rest of the class and relative to outside standards less highly, with only 43 percent and 51 percent, respectively, rating these evaluation criteria as very or extremely important.

Kindergarten teachers' ratings of the importance of various evaluation criteria were next evaluated by school type, years of teaching experience, teachers' highest level of education, and area of teaching certification (table 6 in appendix). Figure 7 shows the percentage of kindergarten teachers who reported that various evaluation criteria were very or extremely important in assessing students, by school type. No statistically significant differences were found in any of these comparisons except for type of school.

Figure 7. - Percentage of teachers reporting that various student evaluation criteria are very or extremely important, by type of school



SOURCE: Early Childhood Longitudinal Study, Fall Kindergarten Teacher Questionnaires, U.S. Department of Education, National Center for Education Statistics, 1998.

Public kindergarten teachers are more likely to rate all evaluation criteria as being very or extremely important; however, not all differences in ratings were statistically significant. Fifty-six percent of public teachers rated individual achievement relative to outside standards as being very or extremely important, in comparison with only 36 percent of Catholic kindergarten teachers and 33 percent of other, private school teachers. Class participation was also rated more highly by public teachers than other teachers (90 percent vs. 81 percent of Catholic kindergarten teachers and 78 percent of other, private school teachers). Finally, 92 percent of public and Catholic school kindergarten teachers reported daily attendance as a very or extremely important evaluation criterion compared to 82 percent of other private school teachers.

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Summary

The growing awareness of the importance of "ready schools" to facilitate the development of the nation's children is underscored by the issuance of instructional guidelines from national standards panels, education agencies, early childhood researchers, and educators. These guidelines recommend teaching approaches that are appropriate for young children and also systems for evaluating children. This paper examined the extent to which kindergarten teachers in the United States practice instructional approaches and value evaluation criteria advocated by the early childhood community and national standards panels in their kindergarten classrooms.

Children develop knowledge and skills through physical interactions with appropriate materials and social interactions with adults and peers. In general, this study found that kindergarten teachers, regardless of the length of the school day (half-day or full-day) and the type of school in which they teach (public or private) use a variety of instructional grouping practices. Teachers report using a larger proportion of class time in teacher-directed whole group instruction than in any of the more individualized teacher-directed (i.e., small group and individual) or student-selected activities. However, the proportion of time spent in the more individualized teacher-directed instruction and student-selected activities combined is greater than the proportion of time spent in teacher-directed whole-group instruction. Teachers also reported providing opportunities for children to learn and work in small groups and independently in a variety of centers. Most of the teachers reported having activity centers that provide students with opportunities to select from a variety of activities. Activity centers are avenues with which kindergarten teachers provide opportunities for children to choose activities to engage in such as reading, writing, painting, pretend play, and block building. The preponderance of activity centers related to literacy suggests the importance that teachers place on literacy skills.

Just as public and private schools differ from each other in student populations, educational goals, and teacher credentials, so do the proportion of instructional approaches in which public and private school kindergarten teachers engage. The differences in the instructional approaches employed by kindergarten teachers, may in, part be related to whether they teach in a public or private school setting.

The findings reported in this study also underscore the importance of higher education and teaching preparation in early childhood or elementary education. Designing activities to reinforce and enrich learning requires the knowledge and understanding of child development and teaching. Indeed, the types of activity centers teachers reported having in their classrooms is related to their level of education and certification. These findings are consistent with previous research (Henke et al. 1999) on the relationship of the teachers' level of education and the use of recommended educational practices.

These findings provide some clues as to what the philosophical orientations of kindergarten teachers may be. In general, kindergarten teachers favor evaluation criteria that focus on behavioral aspects: effort and social/personal behaviors. The value that kindergarten teachers place on these criteria suggests the importance that kindergarten teachers place on the socializing role of kindergarten. Thus, teachers may view the role of kindergarten as a societal agent for teaching children the work expectations of school. The value that the 1998-1999 kindergarten teachers place on social/personal behaviors is similar to the public school kindergarten teachers surveyed in 1992. In that survey, more than half of the teachers placed significant importance on following directions, not being disruptive in class, being sensitive to others, and taking turns (Heaviside & Farris 1993).

This paper provides a description of the instructional grouping strategies used by kindergarten teachers. It also describes the evaluation criteria perceived as most important by the teachers. For the purpose of this paper, data from kindergarten teachers participating in ECLS-K in the fall of 1998 were used. At the same time, child assessment and parent interview data were collected. In the spring of 1999,

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data were once again collected from the same kindergarten teachers, the children were again assessed, and the same parents were interviewed. During the spring, school administrators completed questionnaires about their school and themselves.

The ECLS-K is a rich source of data collected . m multiple sources at different points in time. Future analyses of the ECLS-K data may examine othe issues related to the education of young children by linking the fall 1998 teacher data with data from the other ECLS-K data files such as the fall 1998 and spring 1999 child and parent files or the spring 1999 teacher and school files. The following are some examples of research topics that can be addressed; it is not an exhaustive list in any way of the potential issues that may be examined with the ECLS-K data.

Teachers' perceptions of the children assigned to their class are likely to influence decisions about classroom activities and instructional strategies. Using the fall 1998 kindergarten teacher data, it will be possible to examine the relationship of the teachers' reported instructional practices and their notions of what skills and behaviors children must demonstrate at entry to kindergarten to be successful. It is also possible to examine the relationship of the teachers' evaluations of the children's literacy, numeracy, and social skills to both teachers' perceptions and their classroom activities and strategies.

At all levels of education, including all children in regular education programs often presents challenges to teachers. Using data from the fall and spring kindergarten teacher files, it will be possible to describe the instructional strategies and activities used by kindergarten teachers with different concentrations of English language learners and children with disabilities in their classrooms.

By combining data from the teacher and child files, analysts will be able to examine issues related to opportunity to learn. Combining the teacher data on instructional strategies used in this report with other teacher data on curriculum coverage found in both the fall 1998 and the spring 1999 teacher files and data on performance on literacy and numeracy tasks in the child files, analysts will be able to relate common grouping practices to differences in children's performance outcomes.

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Table 2. – Proportion of time that teachers in a.m. and p.m. classrooms have their students participate in various grouping arrangements

School and teacher characteristic	Average total instructional time (in hours)	Proportion of time spent in different grouping practices			
		Teacher-directed instruction			Child-selected activities
		Whole group instruction	Small group instruction	Individual instruction	
Kindergarten teachers with a.m. and/or p.m. classrooms	3.5	0.36	0.26	0.16	0.21
Type of school					
Public	3.5	0.36	0.27	0.16	0.20
Catholic	3.4	0.43	0.23	0.15	0.19
Other private	3.6	0.35	0.21	0.17	0.28
Years of kindergarten teaching experience					
Less than 3 years	3.5	0.36	0.25	0.17	0.22
Three to nine years	3.5	0.37	0.27	0.16	0.21
Ten to nineteen years	3.5	0.37	0.26	0.16	0.21
20 years or more	3.7	0.32	0.28	0.17	0.23
Teacher's highest level of education					
Less than bachelor's degree	N/A	N/A	N/A	N/A	N/A
Bachelor's degree	3.6	0.36	0.26	0.16	0.21
Master's degree	3.4	0.36	0.26	0.16	0.22
Education specialist/Doctorate	3.5	0.32	0.29	0.19	0.20
Teacher's Certification					
Elementary Education only	3.5	0.37	0.27	0.16	0.20
Early Childhood Education only	3.6	0.34	0.23	0.16	0.27
Both elementary and early childhood education	3.6	0.36	0.26	0.16	0.22
Neither elementary nor early childhood education	3.6	0.34	0.29	0.19	0.18

NOTE: Teachers may have reported an overlap in time, due to the fact that more than one grouping activity could be taking place in the classroom simultaneously. N/A indicates less than 30 cases in the denominator of a cell. Percentages may not add to 100 because of rounding, and details may not add to totals because of rounding for weighted estimates.

SOURCE: Early Childhood Longitudinal Study, Fall Kindergarten Teacher Questionnaires, U.S. Department of Education, National Center for Education Statistics, 1998.

Table 2a. – Standard errors: Proportion of time that teachers in a.m. and p.m. classrooms have their students participate in various grouping arrangements

School and teacher characteristic	Average total instructional time (in hours)	Proportion of time spent in different grouping practices			
		Teacher-directed instruction			Child-selected activities
		Whole group instruction	Small group instruction	Individual instruction	
Kindergarten teachers with a.m. and/or p.m. classrooms	.06	0.008	0.006	0.004	0.005
Type of school					
Public	.06	0.008	0.006	0.004	0.005
Catholic	.15	0.022	0.013	0.012	0.018
Other private	.19	0.030	0.017	0.017	0.024
Years of kindergarten teaching experience					
Less than 3 years	.10	0.013	0.010	0.009	0.012
Three to nine years	.09	0.011	0.009	0.005	0.007
Ten to nineteen years	.08	0.011	0.008	0.006	0.007
20 years or more	.13	0.019	0.016	0.012	0.011
Teacher's highest level of education					
Less than bachelor's degree	N/A	N/A	N/A	N/A	N/A
Bachelor's degree	.07	0.009	0.007	0.005	0.007
Master's degree	.09	0.015	0.010	0.006	0.010
Education specialist/Doctorate	.21	0.027	0.022	0.020	0.010
Teacher's Certification					
Elementary Education only	.07	0.010	0.007	0.005	0.006
Early Childhood Education only	.22	0.049	0.013	0.022	0.037
Both elementary and early childhood education	.08	0.011	0.007	0.005	0.008
Neither elementary nor early childhood education	.33	0.047	0.045	0.036	0.033

NOTE: Teachers may have reported an overlap in time, due to the fact that more than one grouping activity could be taking place in the classroom simultaneously. N/A indicates less than 30 cases in the denominator of a cell. Percentages may not add to 100 because of rounding, and details may not add to totals because of rounding for weighted estimates.

SOURCE: Early Childhood Longitudinal Study, Fall Kindergarten Teacher Questionnaires, U.S. Department of Education, National Center for Education Statistics, 1998.

Table 3. – Proportion of time that teachers in all-day classrooms have their students participate in various grouping arrangements

School and teacher characteristic	Average instructional time (in hours)	Proportion of time spent in different grouping practices			
		Teacher-directed instruction			Child-selected activities
		Whole group instruction	Small group instruction	Individual instruction	
Kindergarten teachers with all-day classrooms	5.0	0.39	0.25	0.16	0.20
Type of school					
Public	5.0	0.38	0.26	0.16	0.20
Catholic	5.1	0.48	0.22	0.13	0.17
Other private	4.6	0.39	0.20	0.18	0.23
Years of kindergarten teaching experience					
Less than 3 years	4.8	0.40	0.25	0.15	0.20
Three to nine years	5.0	0.38	0.25	0.16	0.21
Ten to nineteen years	5.0	0.39	0.24	0.17	0.20
20 years or more	5.2	0.38	0.26	0.16	0.20
Teacher's highest level of education					
Less than bachelor's degree	N/A	N/A	N/A	N/A	N/A
Bachelor's degree	4.9	0.39	0.25	0.16	0.20
Master's degree	5.0	0.38	0.26	0.16	0.20
Education specialist/Doctorate	5.3	0.36	0.27	0.17	0.20
Teacher's Certification					
Elementary Education only	5.1	0.39	0.25	0.16	0.19
Early Childhood Education only	4.8	0.37	0.23	0.16	0.23
Both elementary and early childhood education	4.9	0.39	0.25	0.16	0.21
Neither elementary nor early childhood education	4.9	0.36	0.24	0.22	0.18

NOTE: Teachers may have reported an overlap in time, due to the fact that more than one grouping activity could be taking place in the classroom simultaneously. N/A indicates less than 30 cases in the denominator of a cell. Percentages may not add to 100 because of rounding, and details may not add to totals because of rounding for weighted estimates.

SOURCE: Early Childhood Longitudinal Study, Fall Kindergarten Teacher Questionnaires, U.S. Department of Education, National Center for Education Statistics, 1998.

Table 3a. – Standard errors: Proportion of time that teachers in all-day classrooms have their students participate in various grouping arrangements

School and teacher characteristic	Average instructional time (in hours)	Proportion of time spent in different grouping practices			
		Teacher-directed instruction			Child-selected activities
		Whole group instruction	Small group instruction	Individual instruction	
Kindergarten teachers with all-day classrooms	.05	0.007	0.007	0.003	0.004
Type of school					
Public	.05	0.007	0.007	0.003	0.003
Catholic	.15	0.017	0.012	0.006	0.010
Other private	.14	0.021	0.015	0.015	0.014
Years of kindergarten teaching experience					
Less than 3 years	.07	0.011	0.009	0.006	0.007
Three to nine years	.07	0.010	0.009	0.004	0.006
Ten to nineteen years	.07	0.009	0.007	0.008	0.006
20 years or more	.12	0.012	0.011	0.009	0.009
Teacher's highest level of education					
Less than bachelor's degree	N/A	N/A	N/A	N/A	N/A
Bachelor's degree	.06	0.009	0.007	0.004	0.005
Master's degree	.06	0.008	0.007	0.004	0.005
Education specialist/Doctorate	.17	0.019	0.023	0.011	0.011
Teacher's Certification					
Elementary Education only	.09	0.011	0.01	0.005	0.005
Early Childhood Education only	.13	0.014	0.011	0.006	0.011
Both elementary and early childhood education	.06	0.008	0.007	0.004	0.005
Neither elementary nor early childhood education	.21	0.037	0.024	0.045	0.024

NOTE: Teachers may have reported an overlap in time, due to the fact that more than one grouping activity could be taking place in the classroom simultaneously. N/A indicates less than 30 cases in the denominator of a cell. Percentages may not add to 100 because of rounding, and details may not add to totals because of rounding for weighted estimates.

SOURCE: Early Childhood Longitudinal Study, Fall Kindergarten Teacher Questionnaires, U.S. Department of Education, National Center for Education Statistics, 1998.

Figure 3. – Standard errors: Percentage of teachers reporting that they have various activity centers in their classrooms

Evaluation criterion	Standard error
Art area	0.7
Dramatic play area	1.1
Computer area	1.1
Science/nature area with manipulatives	1.0
Water/sand table	1.9
Puzzle and block area	0.4
Math area with manipulatives	0.7
Pocket chart/flannel board	0.9
Writing center	0.9
Listening center	1.1
Reading area with books	0.3

SOURCE: Early Childhood Longitudinal Study, Fall Kindergarten Teacher Questionnaires, U.S. Department of Education, National Center for Education Statistics, 1998.

Table 5. – Average number of learning centers in teachers' classrooms, by teacher and classroom characteristics

Characteristic	Literacy Centers (0 – 4)	Math Centers (0-2)	Science Centers (0-2)	Art Centers (0-2)	Computer Centers (0-1)
All kindergarten teachers	3.6	1.9	1.1	1.7	0.8
Type of school					
Public	3.7	2.0	1.1	1.8	0.9
Catholic	3.3	1.9	0.9	1.6	0.7
Other private	3.1	1.8	1.2	1.5	0.7
Years of kindergarten teaching experience					
Less than 3 years	3.4	1.9	1.0	1.6	0.8
Three to nine years	3.6	1.9	1.2	1.8	0.9
Ten to nineteen years	3.6	2.0	1.2	1.8	0.9
20 years or more	3.6	1.9	1.1	1.7	0.9
Teacher's highest level of education					
Less than bachelor's degree	2.8	1.5	0.9	1.4	0.6
Bachelor's degree	3.5	1.9	1.1	1.7	0.8
Master's degree	3.6	2.0	1.2	1.8	0.9
Education specialist/Doctorate	3.6	2.0	1.2	1.7	0.9
Teacher's Certification					
Elementary Education only	3.5	1.9	1.0	1.7	0.9
Early Childhood Education only	3.5	1.9	1.3	1.7	0.8
Both elementary and early childhood education	3.6	2.0	1.2	1.8	0.9
Neither elementary nor early childhood education	3.1	1.7	0.9	1.4	0.6

SOURCE: Early Childhood Longitudinal Study, Fall Kindergarten Teacher Questionnaires, U.S. Department of Education, National Center for Education Statistics, 1998.

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Table 5a. – Standard errors: Average number of learning centers in teachers' classrooms, by teacher and classroom characteristics

Characteristic	Literacy Centers (0 – 4)	Math Centers (0-2)	Science Centers (0-2)	Art Centers (0-2)	Computer Centers (0-1)
All kindergarten teachers	0.02	0.01	0.02	0.02	0.01
Type of school					
Public	0.01	0.01	0.03	0.02	0.01
Catholic	0.08	0.03	0.08	0.07	0.05
Other private	0.08	0.06	0.06	0.05	0.04
Years of kindergarten teaching experience					
Less than 3 years	0.05	0.04	0.03	0.02	0.03
Three to nine years	0.03	0.01	0.03	0.01	0.02
Ten to nineteen years	0.04	0.02	0.04	0.02	0.02
20 years or more	0.04	0.02	0.04	0.03	0.04
Teacher's highest level of education					
Less than bachelor's degree	0.29	0.14	0.[illegible]	0.15	0.10
Bachelor's degree	0.02	0.02	0.[illegible]	0.02	0.01
Master's degree	0.03	0.01	0.[illegible]	0.02	0.02
Education specialist/Doctorate	0.07	0.03	0.07	0.06	0.03
Teacher's Certification					
Elementary Education only	0.03	0.02	0.03	0.02	0.01
Early Childhood Education only	0.07	0.03	0.06	0.05	0.03
Both elementary and early childhood education	0.02	0.01	0.03	0.02	0.02
Neither elementary nor early childhood education	0.11	0.05	0.09	0.09	0.06

SOURCE: Early Childhood Longitudinal Study, Fall Kindergarten Teacher Questionnaires, U.S. Department of Education, National Center for Education Statistics, 1998.

Table 6. - Percentage of kindergarten teachers who reported that various criteria are very important or essential for evaluating kindergartners

Characteristic	Individual achievement relative to rest of class	Individual achievement relative to outside standards	Individual improvement or progress	Effort
All kindergarten teachers	43	51	97	97
Type of school				
Public	44	56	97	98
Catholic	44	36	96	97
Other private	35	33	95	95
Years of kindergarten teaching experience				
Less than 3 years	39	48	96	97
Three to nine years	45	50	97	97
Ten to nineteen years	44	55	97	99
20 years or more	46	56	95	98
Teacher's highest level of education				
Less than bachelor's degree	58	71	99	100
Bachelor's degree	43	50	98	97
Master's degree	43	51	95	98
Education specialist/Doctorate	33	54	97	98
Teacher's Certification				
Elementary Education only	43	53	98	97
Early Childhood Education only	39	45	97	97
Both elementary and early childhood education	45	53	96	98
Neither elementary nor early childhood education	36	47	95	97

SOURCE: Early Childhood Longitudinal Study, Fall Kindergarten Teacher Questionnaires, U.S. Department of Education, National Center for Education Statistics, 1998.

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Table 6. – Percentage of kindergarten teachers who reported that various criteria are very important or essential for evaluating kindergartners, continued

Characteristic	Class participation	Daily attendance	Classroom behavior or conduct	Cooperates with other children	Ability to follow directions
All kindergarten teachers	88	91	95	94	97
Type of school					
Public	90	92	96	94	98
Catholic	81	92	95	94	98
Other private	78	82	94	93	94
Years of kindergarten teaching experience					
Less than 3 years	86	88	95	93	96
Three to nine years	87	91	94	94	97
Ten to nineteen years	91	93	97	96	99
20 years or more	86	93	96	95	99
Teacher's highest level of education					
Less than bachelor's degree	87	93	100	96	100
Bachelor's degree	87	91	95	94	97
Master's degree	87	91	95	95	97
Education specialist/Doctorate	93	90	97	91	98
Teacher's Certification					
Elementary Education only	88	90	95	94	97
Early Childhood Education only	89	93	96	94	98
Both elementary and early childhood education	89	92	96	95	98
Neither elementary nor early childhood education	72	81	95	92	92

SOURCE: Early Childhood Longitudinal Study, Fall Kindergarten Teacher Questionnaires, U.S. Department of Education, National Center for Education Statistics, 1998.

Table 6a. – Standard errors: Percentage of kindergarten teachers who reported that various criteria are very important or essential for evaluating kindergartners

Characteristic	Individual achievement relative to rest of class	Individual achievement relative to outside standards	Individual improvement or progress	Effort
All kindergarten teachers	1.3	1.4	0.5	0.3
Type of school				
Public	1.4	1.4	0.4	0.3
Catholic	5.4	4.7	1.6	1.7
Other private	4.2	4.8	1.8	1.6
Years of kindergarten teaching experience				
Less than 3 years	2.3	2.4	0.8	0.8
Three to nine years	2.0	1.8	0.7	0.7
Ten to nineteen years	1.9	2.2	0.9	0.3
20 years or more	3.6	3.3	1.5	1.2
Teacher's highest level of education				
Less than bachelor's degree	8.6	6.9	0.9	0.0
Bachelor's degree	1.7	1.6	0.5	0.5
Master's degree	2.2	2.5	1.0	0.5
Education specialist/Doctorate	5.0	5.1	2.1	0.9
Teacher's Certification				
Elementary Education only	1.9	1.9	0.5	0.7
Early Childhood Education only	3.9	4.1	1.4	1.0
Both elementary and early childhood education	1.9	2.0	0.9	0.4
Neither elementary nor early childhood education	5.8	8.6	1.9	2.0

SOURCE: Early Childhood Longitudinal Study, Fall Kindergarten Teacher Questionnaires, U.S. Department of Education, National Center for Education Statistics, 1998.

Table 6a. – Standard errors: Percentage of kindergarten teachers who reported that various criteria are very important or essential for evaluating kindergartners, continued

Characteristic	Class participation	Daily attendance	Classroom behavior or conduct	Cooperates with other children	Ability to follow directions
All kindergarten teachers	0.8	0.7	0.5	0.6	0.4
Type of school					
Public	0.6	0.6	0.4	0.5	0.3
Catholic	3.6	2.3	1.8	1.9	1.0
Other private	3.9	3.1	2.1	2.7	2.6
Years of kindergarten teaching experience					
Less than 3 years	2.1	1.8	0.9	1.2	1.3
Three to nine years	1.3	1.1	0.9	1.0	0.6
Ten to nineteen years	1.1	0.9	0.6	0.7	0.4
20 years or more	2.5	1.7	1.5	1.8	0.6
Teacher's highest level of education					
Less than bachelor's degree	6.7	5.3	0.0	4.3	0.0
Bachelor's degree	1	0.9	0.7	0.8	0.6
Master's degree	1.5	1.1	0.8	0.8	0.8
Education specialist/Doctorate	1.8	2.9	1.2	3.3	1.8
Teacher's Certification					
Elementary Education only	1.2	1.1	0.7	1.0	0.8
Early Childhood Education only	2.3	1.7	1.1	1.1	0.6
Both elementary and early childhood education	1.0	1.0	0.6	0.7	0.4
Neither elementary nor early childhood education	7.6	7.7	2.3	3.4	4.2

SOURCE: Early Childhood Longitudinal Study, Fall Kindergarten Teacher Questionnaires, U.S. Department of Education, National Center for Education Statistics, 1998.