



Minnesota School Readiness Study

Developmental Assessment
at Kindergarten Entrance
Fall 2007



Minnesota
Department
of Education

Acknowledgements

Minnesota School Readiness Study: Developmental Assessment at Kindergarten Entrance

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Special thanks to the 96 elementary schools involved in the study, their principals, kindergarten teachers, support staff, and the superintendents of the school districts. The observation and collection of developmental information by these kindergarten teachers on kindergarten children in their classrooms were essential to the study and much appreciated.

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Minnesota School Readiness Study: Developmental Assessment at Kindergarten Entrance - Fall 2007

Research has shown, and continues to show that there is a critical relationship between early childhood experiences, school success, and positive life-long outcomes. This research has been a focal point for many states as they strive to reduce the growing achievement gap between less advantaged students and their same-aged peers in their educational system.

With no systematic process in place to assess children's school readiness, the Minnesota Department of Education in 2002 initiated a series of three yearly studies focused on obtaining a picture of the school readiness of a representative sample of Minnesota kindergartners as they enter school in the fall and to evaluate changes in the percentage of children fully prepared for school at kindergarten entrance. The studies were well-received by the public, and during the 2006 Minnesota state legislative session, Governor Tim Pawlenty proposed and the legislature appropriated funding for the study to be continued on an annual basis.

This report describes findings from the assessment of school readiness using a random sample of children entering kindergarten in Minnesota in Fall 2007. The data provides a picture of the readiness levels of entering kindergartners for the state across five domains of child development. The school readiness information should be used to inform parents; school teachers and administrators; early childhood education and care teachers, providers and administrators; policymakers; and the public about how prepared children are for kindergarten and how well schools are prepared for children.

The results of the study can be used to:

1. Inform teacher instruction.
2. Create community dialogue and promote kindergarten transition strategies.
3. Target resources to those children who are at-risk for not being fully prepared for kindergarten.

Definition of School Readiness

For purposes of the study, school readiness is defined as the skills, knowledge, behaviors and accomplishments that children know and can do as they enter kindergarten in the following areas of child development: social and emotional development; approaches to learning; language and literacy development; creativity and the arts; cognition and general knowledge; and physical well being and motor development.

Assessing School Readiness

The study is designed to capture a picture of the readiness of Minnesota children as they enter kindergarten and track readiness trends over time. To ensure that results are reliable and can be generalized to the entire population of Minnesota kindergartners, the study uses a 10 percent random sample of schools with entering kindergartners. This sample size generates data from over 6,000 kindergartners and produces results with a margin of error of plus or minus less than one-half of a percentage point (.38) at the 95 percent confidence level.

Given the complexities of assessing young children, the study is designed to ensure the assessment is appropriate, beneficial and useful, and is guided by best practices in the field of early childhood.

The study uses a developmentally appropriate observational assessment that allows children to demonstrate their knowledge and skills in various ways. The Work Sampling System (WSS[®]), a standards-based observational assessment system designed to provide information about individual student's learning and progress over time, is used for the assessment.

The assessment is aligned with the Minnesota Early Childhood Indicators of Progress and the K-12 Academic Standards and assesses all areas of child development including cognitive, social, emotional, physical and approaches to learning. These areas of development are represented by the five domains of the Work Sampling System Checklist — Personal and Social Development; Language and Literacy; Mathematical Thinking; The Arts; and Physical Development. Because children develop and grow along a continuum with great variability, the goal of the study is to assess a cohort of children's proficiency within and across these developmental domains and not establish whether or not children are ready for school with the use of a composite "ready" or "not ready" score.

Each domain and developmental indicator within the WSS² Developmental Checklist includes expected behaviors for children at that age or grade level. For each indicator, teachers used guidelines to rate the child's performance as:

- o **Proficient** — indicating that the child can reliably and consistently demonstrate the skill, knowledge, behavior or accomplishment represented by the performance indicator.
- o **In Process** — indicating that the skill, knowledge, behavior or accomplishment represented by the indicator are intermittent or emergent, and are not demonstrated reliably or consistently.
- o **Not Yet** — indicating that the child cannot perform the indicator, i.e., the performance indicator represents a skill, knowledge, behavior or accomplishment not yet acquired.

2007 Results

A total of 6,493 kindergarteners from 96 randomly selected elementary schools across the state were included in the Fall 2007 cohort. This reflects just over 10% of the entering kindergarteners for the 2007-2008 school year.

The domain rankings by proficiency for the 2007 cohort are consistent with previous years of the study. Physical Development had the highest percentage of children assessed "Proficient" on average, followed in order by The Arts; Personal and Social Development; Language and Literacy, and Mathematical Thinking.

	Table 1. Readiness Levels by Domain (Number and Percent) <i>N</i> =6,493		
	Not Yet	In Process	Proficient
<i>Physical Development and Health</i>	<i>N</i> =169 3%	<i>N</i> =2,116 33%	<i>N</i> =4,198 65%
<i>The Arts</i>	<i>N</i> =335 5%	<i>N</i> =2,734 42%	<i>N</i> =3,412 53%
<i>Personal and Social Development</i>	<i>N</i> =544 8%	<i>N</i> =2,567 40%	<i>N</i> =3,369 52%
<i>Language and Literacy</i>	<i>N</i> =639 10%	<i>N</i> =2,574 40%	<i>N</i> =3,264 50%
<i>Mathematical Thinking</i>	<i>N</i> =576 9%	<i>N</i> =2,663 41%	<i>N</i> =3,243 50%

Table 2. Readiness Levels by Domain Indicators Ranked by Proficiency Rating	Readiness Levels (Number and Percent) N=6,493					
	Not Yet		In Process		Proficient	
Physical Development and Health	Percent	N	Percent	N	Percent	N
Physical Development Average Score Summary	3%	169	33%	2,116	65%	4,198
Performs some self-care tasks independently	2%	135	30%	1,920	68%	4,426
Coordinates movements to perform simple tasks	2%	123	32%	2,106	66%	4,256
Uses eye-hand coordination to perform tasks	4%	249	36%	2,322	60%	3,912
The Arts						
The Arts Domain Average Score Summary	5%	335	42%	2,734	53%	3,412
Participates in group music experiences	4%	262	40%	2,611	56%	3,612
Uses a variety of art materials for tactile experience and exploration	5%	304	42%	2,701	54%	3,463
Participates in creative movement, dance and drama	6%	361	42%	2,753	52%	3,373
Responds to artistic creations or events	6%	411	44%	2,870	49%	3,198
Personal and Social Development						
Personal and Social Development Domain Average Score Summary	8%	544	40%	2,567	52%	3,369
Interacts easily with familiar adults	5%	337	37%	2,417	58%	3,730
Shows eagerness and curiosity as a learner	6%	389	36%	2,319	58%	3,776
Interacts easily with one or more children	7%	452	37%	2,409	56%	3,631
Shows empathy and caring for others	8%	517	38%	2,491	54%	3,467
Follows simple classroom rules and routines	8%	520	40%	2,600	52%	3,367
Manages transitions	8%	536	39%	2,554	52%	3,394
Shows some self-direction	8%	536	41%	2,683	50%	3,260
Seeks adult help when needed to resolve conflicts	9%	563	42%	2,745	49%	3,152
Attends to tasks and seeks help when encountering a problem	11%	705	42%	2,744	47%	3,038
Approaches tasks with flexibility and inventiveness	14%	889	42%	2,706	44%	2,877
Language & Literacy						
Language & Literacy Domain Average Score Summary	10%	639	40%	2,574	50%	3,264
Shows appreciation for books and reading	4%	255	35%	2,263	61%	3,969
Speaks clearly enough to be understood without contextual clues	8%	519	34%	2,176	58%	3,792
Comprehends and responds to stories read aloud	7%	465	38%	2,458	55%	3,531
Gains meaning by listening	6%	418	42%	2,715	52%	3,356
Shows beginning understanding of concepts about print	9%	581	41%	2,660	50%	3,242
Begins to develop knowledge about letters	10%	675	40%	2,560	50%	3,245
Represents ideas and stories through pictures, dictation and play	8%	549	42%	2,725	49%	3,209
Follows two or three-step directions	12%	787	40%	2,583	48%	3,116
Uses expanded vocabulary and language for a variety of purposes	13%	847	40%	2,569	47%	3,051
Uses letter-like shapes, symbols and letters to convey meaning	13%	846	43%	2,765	44%	2,856
Demonstrates phonological awareness	17%	1,089	44%	2,844	39%	2,540
Mathematical Thinking						
Mathematical Thinking Domain Average Score Summary	9%	576	41%	2,663	50%	3,243
Begins to recognize and describe the attributes of shapes	7%	427	40%	2,589	53%	3,469
Shows understanding of and uses several positional words	8%	540	39%	2,518	53%	3,424
Shows beginning understanding of number and quantity	8%	539	41%	2,686	50%	3,250
Begins to use simple strategies to solve mathematical problems	12%	796	44%	2,860	44%	2,827

Note that categories may not add to 100% due to rounding.

Selected Domain Level Results

Students were most proficient in the Physical Development domain, with 65 percent of students on average rated as "Proficient." After Physical Development, children were most proficient on average in the domain of The Arts (53 %), followed closely by Personal and Social Development (52%). Mathematical Thinking and Language and Literacy were the two domains for which students on average were the least proficient with 50 percent of students rated as "Proficient." These results continue trends from previous years.

The Arts was the domain in which the highest percentage of children were rated "In Process" on average (42%). This was followed by Mathematical Thinking (41%), Language and Literacy and Personal and Social Development (40%), and Physical Development (33%).

In addition, more students were rated "Not Yet" on average in the domains of Language and Literacy (10%) and Mathematical Thinking (9%) than any other domain. Historically, these two domains have consistently been the domains in which students have been rated the least proficient. This year's results also demonstrated that on average 8 percent of students were rated as "Not Yet" in Personal and Social and 5 percent in The Arts. In Physical Development students were rated "Not Yet," on average the least, at 3 percent.

Demographics and Domain Results

The analysis of the data included examining how a particular child or family characteristic may affect children's ratings while controlling for the effects of other demographic variables with which it may be confounded (e.g., a child from a family with a lower household income is more likely to have a parent with a lower education level). The result of "Not Yet" vs. "In Process" or "Proficient" for each domain was analyzed with respect to the demographic characteristics of gender, parent education level, household income, primary home language and race and ethnicity collected from parent surveys.

Household Income Measured by Poverty Guidelines

In order to have a more precise measure of the financial resources available in the home, the parent survey used in this year's study modified the original household income question from previous years in order to index household income to the federal poverty guidelines (FPG). This indexed

variable is referred to as household income in this brief. The data on the relationship between WSS results and household income showed that, even after controlling for all other demographics, higher household income increased the likelihood of a rating of "In Process" or "Proficient" in all five domains. For example, the odds were slightly more than three times as great that a student whose household income was in the 250 percent FPG and above category would be rated "In Process" or "Proficient" as compared to a student whose household income was in the 0-100 percent FPG in Mathematical Thinking.

Parent Education Level

Results were mixed for the impact of the parent education level on the child's proficiency rating. According to this year's results, after controlling for all other demographics, higher parent education level was associated with increased proficiency in Language and Literacy, but not in Personal and Social Development, Mathematical Thinking, The Arts or Physical Development. This is a result to continue to examine in future years.

Primary Home Language

Speaking English most frequently at home was statistically related to Language and Literacy and Mathematical Thinking when the overlap between primary home language, parent education level, race and ethnicity and household income were considered jointly. Speaking English as the primary home language was associated with nearly three times the odds of being rated "In Process" or "Proficient" in Language and Literacy and Mathematical Thinking. Speaking English primarily at home was not statistically related to Physical Development, The Arts or Personal and Social Development after controlling for other demographic variables.

Race and Ethnicity

As in past studies, the logistic regression performed on the 2007 cohort indicated that race and ethnicity was not statistically related to a result of "In Process" or "Proficient" at the domain level when the overlap among race and ethnicity, parent education level, primary home language and household income were considered jointly.

Results by Strata

This year the results of the cohort were also analyzed by strata. Schools were divided into strata based on size and location of the resident district. The first group consisted of the two largest school districts, Minneapolis and St. Paul. The second group was comprised of the seven-county metro area excluding Minneapolis and St. Paul. The third group was for school districts outside of the metropolitan area with enrollments of 2,000 students or greater. The fourth, fifth and sixth groups included school districts outside of the metropolitan area with enrollments between 1,000 to 1,999; 500 to 999; and 0 to 499 respectively.

Across these groups the percentage of students rated as "Not Yet" on average varied by one percentage point in the domains of Physical Development and The Arts, and by four percentage points in Personal and Social Development. In the domains of Language and Literacy and Mathematical Thinking there was a slightly greater variation in the percentage of students rated as "Not Yet" on average in each group. For each of these domains, groups two through six, referenced above, varied from 8 percent to 10 percent in Language and Literacy and from 7 percent to 9 percent in Mathematical Thinking, whereas in group one 15 percent of students were rated as "Not Yet" on average in each Language and Literacy and Mathematical Thinking.

These findings for group one would be anticipated because, based on the parent survey data, these students were more likely to live in households with incomes equal to or less than 185 percent FPG (57% vs. 34% of entire sample), have parents with a high school degree or less (41% vs. 26% of entire sample), and more likely to not speak English as their primary home language (28% vs. 9% of entire sample). Future work in this area would help determine how the results of the students in group one compare to the results of students with similar demographics from other groups.

Conclusions

The 2007 study again confirms that children enter kindergarten with a range of skills, knowledge, behaviors and accomplishments.

1. In all of the developmental domains assessed, a certain percentage of children entering kindergarten did not yet show the indicators of focus.
2. Household income is related to readiness level. The results by household income are consistent with national research showing the impact of poverty on children's school readiness and school success. Future studies will continue to examine the degree of impact of parent education level on child outcomes.
3. The total percentage of students rated on average as "Not Yet" in each of the five developmental domains has remained consistent throughout the five years of the study.
4. Schools with a higher percentage of entering kindergarteners with disadvantaged backgrounds may tend to have fewer children fully prepared for kindergarten at the beginning of the school year.
5. Using performance-based assessments such as the Work Sampling System is appropriate when working with elementary school principals and kindergarten teachers to assess children's readiness as they enter kindergarten.

Recommendations

1. Continue to support parents in their role as children's first teachers. Teachers should communicate assessment data throughout the school year when discussing children's progress with parents.
2. Focus on improving children's early language and literacy and mathematical skills, but not to the neglect of their personal and social skills and development. Providing compensatory services in the area of literacy and mathematical thinking accelerates learning for young children at-risk.
3. Target intervention strategies to children not yet demonstrating proficiency in at least one developmental domain.
4. Continue to work toward improving the quality of early childhood education and care programs in Minnesota by emphasizing the importance of the teacher-child interactions and content-driven curriculum and instruction. The most successful prekindergarten programs provide instructional content through programming that is sufficient in length and intensity to address learning needs.
5. Promote use of school readiness information as school district and community leaders work together to identify best practices and support children's transition to kindergarten.
6. Consider implications for adult education and family literacy programs and programs geared toward increasing job skills and consequent family income level.

Appendix A — Study Results By Domain and Year

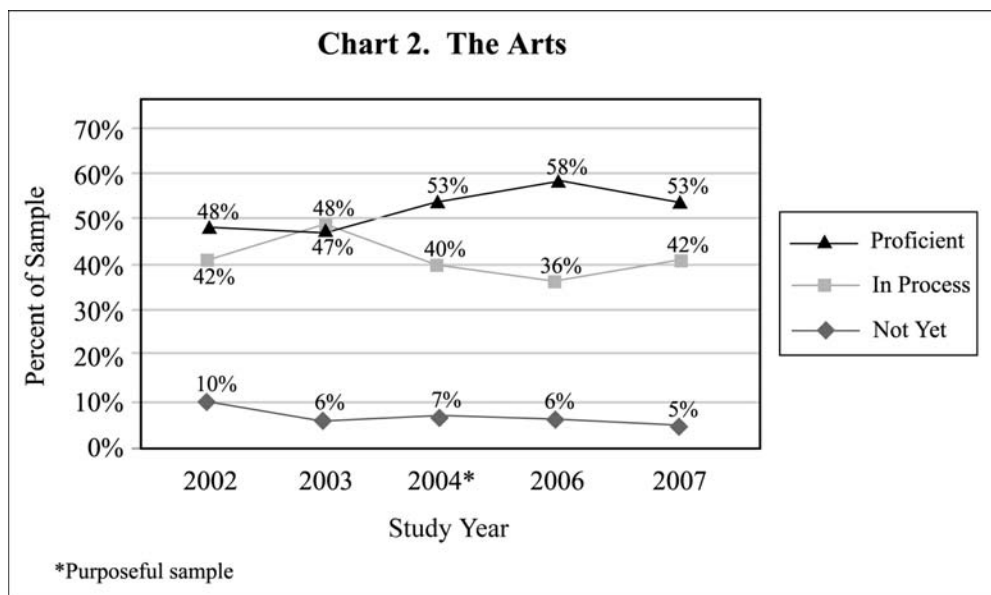
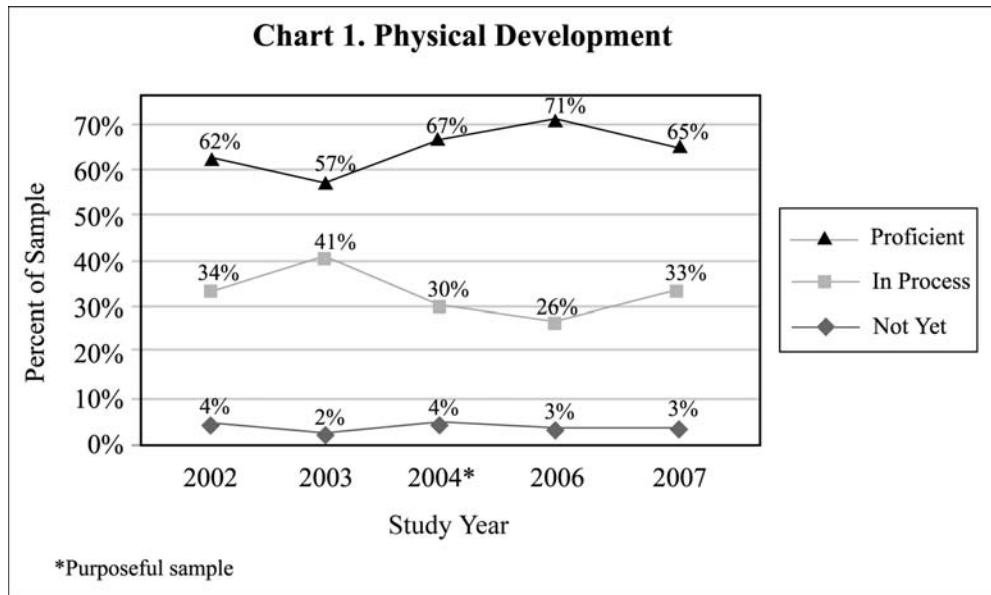
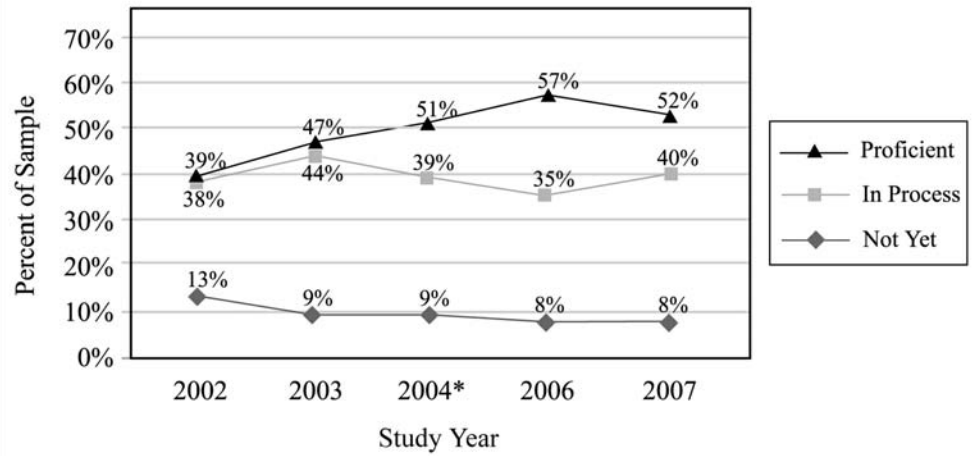
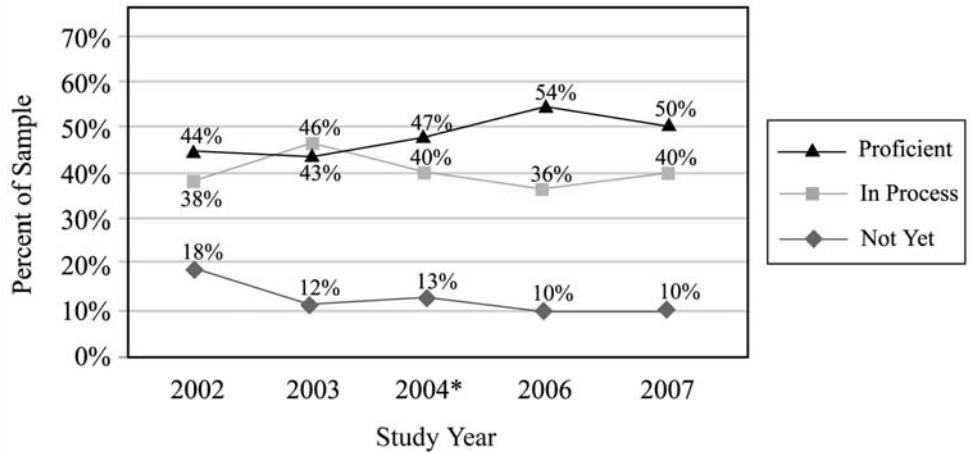


Chart 3. Personal and Social Development

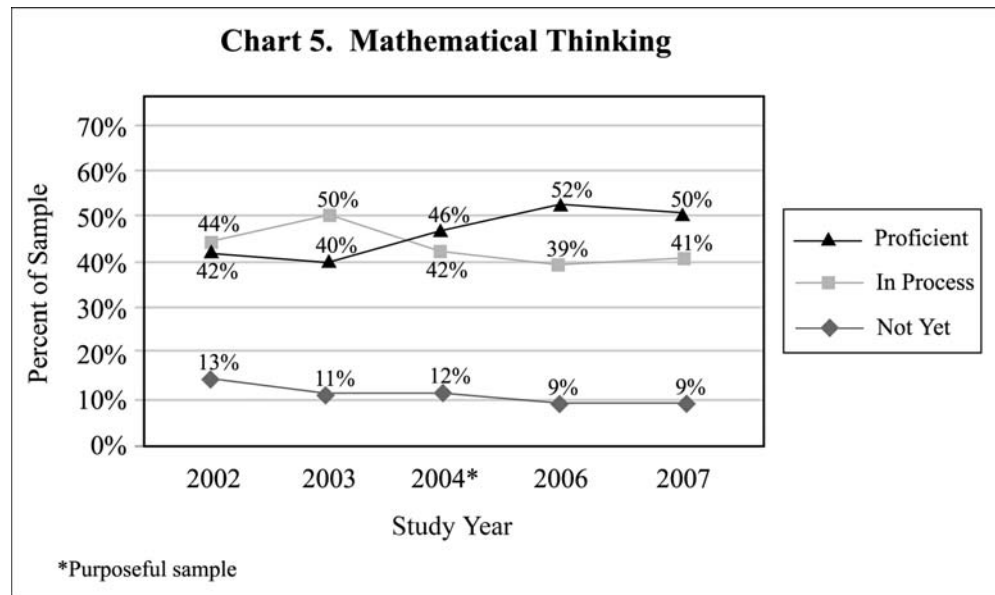


*Purposeful sample

Chart 4. Language and Literacy



*Purposeful sample



For further reading

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FOR TEACHER COMPLETION ONLY



The Minnesota Work Sampling System® Kindergarten Entry Developmental Checklist

INSTRUCTIONS

CORRECT: ●

USE A NO. 2 PENCIL ONLY

INCORRECT: ✓ ✗ ○ ●

Choose One

☐ FEMALE ☐ MALE

Does this student have an IEP or IIP? ☐ yes ☐ no

BLDG CODE		MARSS CODE		DATE OF BIRTH	
				Month	Year
				19	
0	0	0	0	0	0
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9

LEGEND

- (N) Not Yet—child cannot demonstrate indicator
 (I) In Process—child demonstrates indicator intermittently
 (P) Proficient—child can reliably demonstrate indicator

The Work Sampling System *Preschool–4 Developmental Guidelines* (4th edition) contains full descriptions of each performance indicator. (Number in parentheses indicates the page in the Guidelines where the indicator is described.)

I Personal and Social Development

A Self concept Fall

- 1 Shows some self-direction. (p. 1) (N) (I) (P)

B Self control Fall

- 1 Follows simple classroom rules and routines. (p. 1) (N) (I) (P)
 2 Manages transitions. (p. 2) (N) (I) (P)

C Approaches to learning Fall

- 1 Shows eagerness and curiosity as a learner. (p. 2) (N) (I) (P)
 2 Attends to tasks and seeks help when encountering a problem. (p. 2) (N) (I) (P)
 3 Approaches tasks with flexibility and inventiveness. (p. 3) (N) (I) (P)

D Interaction with others Fall

- 1 Interacts easily with one or more children. (p. 3) (N) (I) (P)
 2 Interacts easily with familiar adults. (p. 3) (N) (I) (P)
 3 Shows empathy and caring for others. (p. 4) (N) (I) (P)

E Social problem-solving Fall

- 1 Seeks adult help when needed to resolve conflicts. (p. 4) (N) (I) (P)

II Language and Literacy

A Listening Fall

- 1 Gains meaning by listening. (p. 5) (N) (I) (P)
 2 Follows two- or three-step directions. (p. 5) (N) (I) (P)
 3 Demonstrates phonological awareness. (p. 5) (N) (I) (P)

B Speaking Fall

- 1 Speaks clearly enough to be understood without contextual clues. (p. 6) (N) (I) (P)
 2 Uses expanded vocabulary and language for a variety of purposes. (p. 6) (N) (I) (P)

C Reading Fall

- 1 Shows appreciation for books and reading. (p. 6) (N) (I) (P)
 2 Shows beginning understanding of concepts about print. (p. 7) (N) (I) (P)
 3 Begins to develop knowledge about letters. (p. 7) (N) (I) (P)
 4 Comprehends and responds to stories read aloud. (p. 7) (N) (I) (P)

D Writing Fall

- 1 Represents ideas and stories through pictures, dictation, and play. (p. 8) (N) (I) (P)
 2 Uses letter-like shapes, symbols, and letters to convey meaning. (p. 8) (N) (I) (P)

III Mathematical Thinking

A Mathematical processes Fall

- 1 Begins to use simple strategies to solve mathematical problems. (p. 11) (N) (I) (P)

B Number and operations Fall

- 1 Shows beginning understanding of number and quantity. (p. 11) (N) (I) (P)

C Geometry and spatial relations Fall

- 1 Begins to recognize and describe the attributes of shapes. (p. 12) (N) (I) (P)
 2 Shows understanding of and uses several positional words. (p. 12) (N) (I) (P)

IV The Arts

A Expression and representation Fall

- 1 Participates in group music experiences. (p. 21) (N) (I) (P)
 2 Participates in creative movement, dance, and drama. (p. 21) (N) (I) (P)
 3 Uses a variety of art materials for tactile experience and exploration. (p. 21) (N) (I) (P)

B Understanding and appreciation Fall

- 1 Responds to artistic creations or events. (p. 22) (N) (I) (P)

V Physical Development and Health

A Gross motor development Fall

- 1 Coordinates movements to perform simple tasks. (p. 23) (N) (I) (P)

B Fine motor development Fall

- 1 Uses eye-hand coordination to perform tasks. (p. 24) (N) (I) (P)

C Personal health and safety Fall

- 1 Performs some self-care tasks independently. (p. 24) (N) (I) (P)

For teacher use only



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