Colorado School Readiness Indicators
Preliminary Review of Potential Indicators

Report Prepared by WestEd

As part of the 2008 Model Content Standards Review, the Colorado Department of Education (CDE) asked WestEd to review and summarize national- and state-based initiatives to define school readiness indicators. As a first step in this process, WestEd examined a number of such initiatives undertaken since the National Education Goals Panel (1990) issued the following challenge as Goal 1: "By the year 2000, all children in America will start school ready to learn."

While many reports have been released and progress reported, the most comprehensive effort to date appears to be a 17-state partnership that issued a report entitled: *Getting Ready: Findings from the National School Readiness Indicators Initiative* (2005). WestEd analysts focused their preliminary review on this report for several reasons. First, it represents a multi-faceted, multi-dimensional approach towards defining school readiness, including 23 indicators in the following categories:

1. Ready Children (5 indicators)
2. Ready Families (4 indicators)
3. Ready Communities (3 indicators)
4. Ready Services – Health (4 indicators)
5. Ready Services – Early Care and Education (5 indicators)
6. Ready Schools (2 indicators)

Next, based on citations and reviews, the report appears to have been received highly favorably by a wide range of relevant groups including educators, the health community, and policy makers. The 17 states that participated in the study (including Colorado) are geographically and demographically diverse. Finally, the indicators included are to varying degrees research-based and measurable.

This preliminary report presents an analysis by WestEd early childhood specialists of several key factors for each indicator. Specifically, we note whether the indicator is indeed based on research (Yes, No) and cite specific studies that support its inclusion for the state's consideration. We also rate the extent to which each indicator is measurable in a state system, based on the technical and logistic factors of reliability and cost. The reliability and cost are shown with arrows ($\uparrow$ = high, $\rightarrow$ = medium, $\downarrow$ = low), and summarized with an overall high, medium, or low rating. Next, we indicate, based on our judgment, the level of priority each indicator should receive in a state-based system. Finally, in a few instances, we suggest additional indicators a state may wish to consider as it adapts the report's recommendations for local use.

CATEGORIES/INDICATORS	RESEARCH	MEASURABILITY	PRIORITY	REFERENCES
Ready Children				
Physical Well-Being and Motor Development →Core Indicator: % of children within age-appropriate fine motor skills *Possession of adequate levels of energy enable the child to concentrate on school activities and the ability to resist common infections. Frequent absences from school in the early grades due to illness may result in failure to learn the basics that are crucial for mastering more advanced academic work.*	Yes	High ↑Reliability ↓Cost	High	Zero To Six: The Basics for School Readiness. (1997). Chapter 2. Retrieved September 11, 2008, from http://www.hrsdc.gc.ca/en/cs/sp/sdc/pkrf/publications/1997-0025571/page04.shtml
Social and Emotional Development →Core Indicator: % of children who often or very often exhibit positive social behaviors when interacting with their peers (Examples: Self-Awareness, Relationships, Play [group]) *Research indicates that young children's emotional adjustment matters. Children who are emotionally well-adjusted have a significantly greater chance of early school success, while children who experience serious emotional difficulty face grave risks of early school difficulty.*	Yes	Medium →Reliability ↓Cost	High	Raver, C. C. (2002). Emotions matter: Making the case for the role of young children's emotional development for early school readiness. *Social Policy Report, 16(3)*, 3-19.
Approaches to Learning →Core Indicator: % of kindergarten students with moderate to serious difficulty following directions *In this 1998 study a scale was used that assessed children's cognitive self-control, defined as the ability to plan, to evaluate, and to self-regulate one's problem-solving activities and one's attention to the task.*	Yes	High ↑Reliability ↓Cost	High	Normandeau, S. & Guay, F. (1998). Preschool behavior and first-grade school achievement: The mediational role of cognitive self-control. *Journal of Educational Psychology, 90*(1) 111-121.

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Categories/Indicators: Taken from *Getting Ready: Findings from the National School Readiness Initiative* (2005); suggested additional indicators noted in blue

Italicized text: Excerpts from, or summarization of, research in "References" column that supports the category or indicator; notes that reflect information addressed in references.

Research: "Yes": inclusion of the indicator is supported by research

Measurability (Reliability + Cost): ↑ = High / → = Medium / ↓ = Low

CATEGORIES/INDICATORS	RESEARCH	MEASURABILITY	PRIORITY	REFERENCES
Ready Children continued				
Language Development and Literacy → Core Indicator: % of children almost always recognizing the relationships between letters and sounds at kindergarten entry *Listening, Writing behaviors, Stories (beg./middle/end)*	Yes	High ↑Reliability ↓Cost	High	Engel, S. (December 1996/January 1997). The Emergence of Story Telling in the First Three Years. *Zero to Three Journal.*
Cognition and General Knowledge →Core Indicator: % of children recognizing basic shapes at kindergarten entry *Examples of cognitive skills include attention, representational and symbolic thinking, and problem solving. General knowledge includes the details of the world in which we live.*	Yes	High ↑Reliability ↓Cost	High	*All Children Ready for School: Cognition and General Knowledge.* Early Childhood Briefing Paper Series. Indiana Institute on Disability and Community.

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Ready Families				
Mother's Education Level →Core Indicator: % of births to mothers with less than a 12th grade education *In 1999, 15 percent of 3- to 5-year-old children (not yet enrolled in kindergarten) whose mothers had not completed high school had three or four skills, compared to 31 percent whose mothers had a high school diploma, 42 percent whose mothers had some college education, 54 percent whose mothers had a college degree, and 57 percent whose mothers had graduate /professional training or degrees. Higher levels of maternal educational attainment have been consistently linked to children's academic achievement.*	Yes	High ↑Reliability ↓Cost	Medium	Nord, C.W., Lennon, J., Liu, B., & Chandler, K. (1999). Home Literacy Activities and Signs of Children's Emerging Literacy: 1993 & 1999. *Education Statistics Quarterly, 2*(1). Haveman, R., and Wolfe. B., (1995). "The Determinants of Children's Attainments: A Review of Methods and Findings." Journal of Economic Literature 23: 1829–1878.
Births to Teens →Core Indicator: # of births to teens ages 15-17 per 1,000 girls *After dropping steadily since the early 1990s, the nation's birth rate for teens ages 15-19 rose 3 percent in 2006, according to a recent report from the National Center for Health Statistics. This represents the first increase in the US teen birth rate in 14 years.*	Yes	High ↑Reliability ↓Cost	Medium	National Center for Health Statistics. Births: Preliminary Data for 2006. NVSR Volume 56, Number 7. 18pp. (PHS) 2008-1120. Retrieved September 10, 2008, from https://www.cdc.gov/nchs/

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Ready Families continued				
Child Abuse and Neglect →Core Indicator: Rate of substantiated child abuse and neglect among children birth to age 6 *This study evaluated the school performance of 139 school-age and adolescent children, 22 of whom had been physically abused and 47 neglected. The abused children displayed pervasive and severe academic and socio-emotional problems, while neglected children displayed academic delays. Both groups of maltreated children showed unexpected strengths on measures of adaptive behavior.*	Yes	High[1] ↑Reliability ↓Cost	Medium/High	Kurtz, P. David, et al. (1993). Maltreatment and the School-Aged Child: School Performance Consequences. *Child Abuse and Neglect: The International Journal*, 17(5), 581-89.
Children in Foster Care →Core Indicator: % of children birth to age 6 in out-of-home placement (foster care) who have no more than two placements in a 24 month period *Foster children often fare poorly in school, showing higher rates of placement in special education, school dropout, and discipline problems, as well as exhibiting poorer academic skills than their non-foster care peers.*	Yes	High ↑Reliability ↓Cost	High	Zedin, A. G., & Weinberg, L. A. (2004). Understanding the plight of foster youth and improving their educational opportunities. Child Abuse and Neglect, 28, 917-923.
Parent Involvement →Core Indicator: % of parents or caregivers who are involved in their child's school *Findings indicate that parental involvement is generally a salient factor in explaining behavior, but not cognitive outcomes.*	Yes	Medium[2] ↓Reliability ↑Cost	High	McNeal, R.B., Jr. (1999). Parental involvement as social capital: Differential effectiveness on science achievement, truancy, and dropping out. *Social Forces, 78*(1), 117–144.

[1] Cost could be higher if data are not readily available, accessible, and/or usable
[2] Overall measurability may be lower depending on availability of data

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Ready Communities				
Young Children in Poverty →Core Indicator: % of children under the age of 6 living in families with incomes below the federal poverty level *Reported direct evidence of the Moving To Opportunity effect in Baltimore on individual children's school performance.*	Yes	Low ↓Reliability ↑Cost	High	Ladd, H. F., & Ludwig, J. (1997). Federal housing assistance, residential relocation, and educational opportunities: Evidence from Baltimore. MTO (Moving To Opportunity). *American Economic Review, 87*(2), 272-277. *Early Childhood Interventions: Proven Results, Future Promise* by Lynn A. Karoly, M. Rebecca Kilburn, and Jill S. Cannon, MG-341-PNC, 2005, 200 pages, ISBN: 0-8330-3836-2
Supports for Families with Infants and Toddlers →Core Indicator: % of infants and toddlers in poverty who are enrolled in Early Head Start *As Head Start does, this framework considers factors related not only to the child but also to the child's family, early childhood care and education, schools, and neighborhood.* *Long-term cost/effectiveness.*	Yes	Medium ↑Reliability ↑Cost	High	Halle T, Zaff J, Calkins J, Margie NG. *Background for Community-Level Work on School Readiness: A Review of Definitions, Assessments, and Investment Strategies, Part II: Reviewing the Literature on Contributing Factors to School Readiness*. Washington, DC: Child Trends; 2000. Available at: www.childtrends.org/Files/LIT_REVIEW_DRAFT_7.pdf.

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Ready Communities continued				
Lead Poisoning →Core Indicator: % of children under age 6 with blood lead levels at or above 10 micrograms per deciliter *Lead has long been known to be toxic. Blood lead levels above 45 micrograms per deciliter (micro/dl) can cause damage to the central nervous system and even death.*	Yes	Medium →Reliability →Cost	High	Philip O'Dowd, "Controversies Regarding Low Blood Lead Level Harm," *Medicine and Health, Rhode Island* 85, no. 11 (November 2002): 345-48; Robert G. Feldman and Roberta F. White, "Lead Neurotoxicity and Disorders of Learning," *Journal of Child Neurology* 7, no. 4 (October 1992): 354-59.

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CATEGORIES/INDICATORS	RESEARCH	MEASURABILITY	PRIORITY	REFERENCES
Ready Services – Health				
Health Insurance →Core Indicator: % of children under the age of 6 without health insurance *Health problems common to U.S. children, such as Attention-Deficit Hyperactivity Disorder, asthma, and lead poisoning, as well as maternal health problems and health-related behaviors that affect children's behavioral and cognitive readiness for school, sometimes with lifelong consequences.*	Yes	Medium ↑Reliability ↓Cost	High	Eugene Lewit, Courtney Bennett, and Richard Behrman, "Health Insurance for Children: Analysis and Recommendations," The Future of Children 13, no 1 (Spring 2003): 1-4.
Low Birthweight Infants →Core Indicator: # of infants born weighing under 2,500 grams (5.5 pounds) *Low birth weight has been found to be a significant predictor of intelligence and achievement, by some estimates accounting for approx. 3-4 percent of the racial gap in IQ scores.*	Yes	High ↑Reliability ↓Cost	High	McCormick, M. C., McCarton, C., Tonascia, J., & Brooks-Gunn, J. (1993). Early educational intervention for very low birth weight infants: Results from the Infant Health and Development Program. *The Journal of Pediatrics, 123*(4), 527-533.
Access to Prenatal Care →Core Indicator: % of births to women who receive late or no prenatal care *The "Healthy Children Ready to Learn" initiative starts with the underlying concept that health is a critical partner to optimum education. A range of critical health problems will require our attention if the goals are to be met, such as availability of prenatal care.*	Yes	Low ↓Reliability ↑Cost	High	Novello, A.C., Degraw, C., & Kleinman, D.V. (1992). Healthy children ready to learn: an essential collaboration between health and education. Public Health Service, Washington, DC. Public Health Report 107(1): 3–15.

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Ready Services – Health continued				
Immunizations →Core Indicator: % of children ages 19-35 months who have been fully immunized *Immunizations protect children from vaccine-preventable diseases that can cause school absences and limit children's ability to achieve in school.*	Yes	High ↑Reliability ↓Cost	High	Institute of Medicine. (2000.) Calling the Shots. Washington DC: National Academy Press.
Nutrition →Core Indicator: % of children who experience food insecurity in the last 12 months (rely on WIC, Free and Reduced School Program) *Prepared to provide food programs.* *Easier to track with WIC/Income levels.* *This includes obesity.*	Yes	Medium ↓Reliability ↓Cost	High	CA Health Interview Survey Data (CHIS) Currie, J. (2003). U.S. Food and Nutrition Programs. in Moffitt, R (e.d). *Means-Tested Transfer Programs in the United States.*. University of Chicago Press for NBER Bhattacharya, J., Currie, J., & Haider, S. (2002). Food Insecurity or Poverty? Measuring Need-Related Dietary Adequacy (Working Paper 9003). Cambridge, MA: National Bureau of Economic Research.

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Ready Services – Health continued				
Access to Mental Health Services →Core Indicator: % of children whose mothers have access to mental health services *Many studies document a relationship between maternal depression and both current and future child behavior problems, insecure attachment, and cognitive problems. Maternal depression can reduce test scores by about a third of a standard deviation among preschool children. Most research states this indicator is difficult to assess.*	Yes	Low →Reliability ↑Cost	High	Carolyn Zahn-Waxler and others, "Antecedents of Problem Behaviors in Children of Depressed Mothers," *Development and Psychopathology* 2 (1990): 271-91.

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Ready Services – Early Care and Education				
Children Enrolled in an Early Education Program →Core Indicator: % of 3 and 4 year olds enrolled in a center-based early childhood care and education program (including child care centers, nursery schools, preschools, Head Start and pre-k programs) *Quality early childhood care and education programs can enhance cognitive, emotional, and social development, especially among low-income preschoolers.*	Yes	High ↑Reliability ↓Cost	High	Kagan, S. L., & Neuman, M. J. (1997). Defining and implementing school readiness: Challenges for families, early care and education, and schools. In R. P. Weissberg, T. P. Gullotta, R. L. Hampton, B. A. Ryan, & G. R. Adams (Eds.), *Healthy children 2010: Establishing preventive services* (pp. 61-96). Thousand Oaks, CA: Sage Publications. Child Development Vol 78 Issue 2, pages 558-580. Published on-line 23 Mar 2007.
Early Education Teacher Credentials →Core Indicator: % of early childhood teachers with a BA degree and specialized training in early childhood *Major studies of early care and education were used to predict classroom quality and children's academic outcomes from the educational attainment of teachers. Findings indicate largely null or contradictory associations. Policies for increasing early childhood education teacher classroom quality or maximizing children's academic gains likely will require a broad range of professional development activities and supports targeted toward teachers' interactions with children.*	Yes	High ↑Reliability ↓Cost	High	Are teachers' education, major, and credentials related to classroom quality and children's academic gains in pre-kindergarten? *Early Childhood Research Quarterly*, *21*(2), 2nd Quarter 2006, Pages 174–195.

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Ready Services – Early Care and Education continued				
Accredited Child Care Centers → Core Indicator: % of child care centers accredited by the National Association for the Education of Young Children (NAEYC) *The NAEYC rigorously evaluated early childhood education programs. Evidence indicates that accredited programs helped young children, especially disadvantaged children, become better prepared to enter and succeed in school.*	Yes	High ↑Reliability ↓Cost	High	S.A. Stephens, Ph.D., Center for Assessment and Policy Development, www.capd.org for Quality New York, NYC's Accreditation Facilitation Project, May 2006.
Accredited Family Child Care Homes →Core Indicator: % of family child care homes accredited by the National Association for Family Child Care (NAFCC) *The quality of the family child care home may have influences on a child's development.*	Yes	High ↑Reliability ↓Cost	High	Hershfield, B. *Promoting School Readiness Using Quality Measures*. Child Care and Development Services. Child Welfare League of America. Retrieved September 12, 2008, from www.cwla.org/programs/daycare/policy schoolreadiness.pdf
Access to Child Care Subsidies → Core Indicator: % of eligible children under age 6 receiving child care subsidies *Some research indicates children receiving subsidies for child care were more likely to be in a formal licensed child care center, have more stable care, and have mothers who were more satisfied with their child care arrangement. Quality child care is critical for helping mothers attain and maintain employment and for promoting healthy childhood development.*	Yes	High ↑Reliability ↓Cost	High	Child Care Subsidies Promote Mothers' Employment and Children's Development. By Colleen Henry, Misha Wersschkul, and Manita C. Rao, October 2003, Briefing Paper Institute for Women's Policy Research (IWPR) Publication #G714.

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Ready Schools				
Class Size →Core Indicator: Average teacher/child ratio in K-1 classrooms *The study suggest class size effects that are large enough to be important for educational policy and that are quite consistent across schools. Thus, small classes appear to benefit all kinds of students in all kinds of schools.*	Yes	High ↑Reliability ↓Cost	Medium	The Effects of Small Classes on Academic Achievement: The Results of the Tennessee Class Size Experiment Barbara Nye, American Educational Research Journal, Vol. 37, No. 1, 123-151 (2000) DOI: 10.3102/00028312037001123.
Fourth Grade Reading Scores →Core Indicator: % of children with reading proficiency in fourth grade as measured by the state's proficiency tests *Readiness in the specific areas of auditory memory and verbal associations predicted later reading achievement, whereas readiness in the specific areas of auditory memory, number skills, and visual discrimination predicted later mathematics achievement.*	Yes	High ↑Reliability ↓Cost	Medium	Kurdek, L.A., & Sinclair, R.J. (2001). Predicting reading and mathematics achievement in fourth-grade children from kindergarten readiness scores.., *Journal of Educational Psychology, 93*(3) 451-455.
Transition →Core Indicator: % of children with a smooth transition into kindergarten *A smooth transition into kindergarten can help set young children on a course for academic achievement and success.*	Yes	Medium →Reliability ↓Cost	Medium	Rimm-Kaufman, S. E., & Pianta, R. C. (In press). An ecological perspective on the transition to kindergarten: A theoretical framework to guide empirical research. *Journal of Applied Developmental Psychology*.

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