

Kansas Kindergarten Readiness Project: Student Readiness for School

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History

The School Readiness Task Force, with representation from state agencies and organizations, local early childhood providers, and school district personnel, began development of the School Readiness Framework during the summer of 2000. The Framework included goals, indicators, and data measures that could allow the State of Kansas to evaluate the level of readiness of entering kindergarten students and the community, school, and family factors that influenced a child's level of readiness. A pilot study was conducted in 2003 to refine the Framework. Work this year assisted in refining the data collection instruments and statistical modeling that will be used to study school readiness in the future.

The Kansas Vision for School Readiness

School Readiness occurs when families, schools, and communities support and serve children effectively so that all children have the ability to succeed in various learning environments.

Introduction

Based on pilot results from 2003, a statewide data collection effort was undertaken in Fall, 2004. Student level data were collected on 1,997 Kindergarten students from 95 Kansas counties to measure the *Child Goal*. These students, representing 170 school districts and at least 233 different schools with Kindergarten classrooms, were assessed by their teachers on six aspects of readiness for Kindergarten: symbolic development, literacy development, mathematical knowledge, social skills development, learning to learn, and physical development. Twelve conceptual indicators promoting student-level readiness were developed based upon "The Kansas Vision for School Readiness". The 12 conceptual indicators were comprised of 22 measurable county-level variables, with all indicators being measured by at least 1 variable (with some having multiple variable measures). The data in the three remaining goal areas were supplied by several different state agencies. The *Family Goal* (Children live in safe and stable families that support learning) included 5 indicators with 7 measured variables. The *Community Goal* (Children live in safe and stable communities that support learning, health, and family services) included 4 conceptual indicators with 6 measured variables. The *School Goal* (Children attend schools that support learning) included 3 conceptual indicators with 9 measured variables. (See Appendix A for a list of the goals, indicators, and measures.)

County-level measures of the community, family, and school goals were hypothesized to predict student-level school readiness among Kansas Kindergarten students. Other states have attempted to collect similar data, but such efforts have resulted in simple descriptions of the school readiness phenomenon on a variable-by-variable basis. Previous research has failed to determine the relationship between model components to confirm that the model accurately reflects reality, and to date there have been no state level studies attempting to provide statistical models to allow for inference and prediction. This project was guided by the smaller 2003 pilot

project and reflects the first attempt at a statewide data collection. The current study is an attempt to examine school readiness with a comprehensive and synergistic model.

Instruments

Student-level data was obtained from the *Kansas School Entry Assessment Data Collection* instrument (KSEA), a modification of the instrument used in the 2003 pilot study and originally based on the *School Entry Assessment Project* instrument from the Missouri Department of Elementary and Secondary Education. The KSEA instrument was completed by teachers who observed the participating students during the first semester of the Kindergarten year and consists of 41 questions pertaining to six aspects of readiness: symbolic development (7 items), literacy development (10 items), mathematical knowledge (7 items), social skills development (8 items), learning to learn (6 items), and physical development (3 items). All 41 items require a 3-category Likert-scale response (“not yet/almost never” = 1, “occasionally/sometimes” = 2, and “almost always” = 3). Summary scores were created for each section by averaging the values assigned above for each of the items per section. The instrument also requested information on the child’s height and weight (for BMI calculations), gender, English language status, eligibility for free or reduced price lunch, and IEP status to be used as covariates. Additional questions were included to determine the type and duration of pre-Kindergarten child care and educational experiences. Teachers interviewed parents for the information to complete these items. (Note: Teachers participating in the current data collection were not provided training related to the completion of this instrument.)

A second instrument, *The Kindergarten Classroom Practices* (KCP) based on the *Assessment of Practices in Early Elementary Classrooms* (APEEC) was sent to one Kindergarten teacher in every public school with a Kindergarten, asked teachers to provide information on the physical environment, instructional context, and social context of their Kindergarten classrooms. The scale used a four-point Likert scale (“true” = 1, “more true than false” = 2, “more false than true” = 3, and “false” = 4). Summary scores were created for each factor assessed and included the Physical Environment Scale (12 items), the Instructional Context Scale (17 items) and the Social Context Scale (13 items). These ratings are based upon the responding teachers’ beliefs about their classroom practices. (Please note: There was no training provided to the teachers in relation to completing the items on this survey.) A total of 709 assessments were sent out to the Kindergarten teachers and 525 were completed for a response rate of 74%.

What Was Learned from 2004-2005 Study and Recommendations

There were several significant limitations to this study that make generalizations from the obtained results conditional.

1. This study represented the initial attempt at a statewide student-level data collection effort where the teacher is asked to indicate their students’ readiness for Kindergarten. The overall response rate was significantly lower than was desired, expected, and recommended based on the 2003 pilot report (counties with Kindergarten populations greater than 1000 averaged only a 1.7% response rate). In order for the data to indicate relationships between family, community, and school variables and student achievement, the achievement level data of sampled students in each county must be representative of all students.

Recommendation: Resources need to allow for better teacher recruitment, training, follow-up and incentives so that adequate sample size can be realized.

2. Teachers in 10 counties did not participate (Comanche, Decatur, Ellsworth, Logan, Osborne, Rawlins, Sherman, Smith, Stanton, and Trego Counties). With the county-level sample size limited to a maximum of 105 counties, failure to collect data from any county is statistically problematic and greatly impacts the generalizability of the study.

Recommendation: Resources will be needed to ensure adequate participation from all 105 Kansas counties

3. County level data was supplied by several state agencies, and their participation is critical to this project. However, several variables contained either missing data for some counties, or data that was clearly not accurate. In several instances, an absence of reporting for a county was treated as a zero-response. The true value may have been missing, or it may have been a true absence of the phenomenon, but the distinction could not be made with the data at hand.

Recommendations: A. For future collections, agencies will need to collaborate to ensure information for this project is timely and well-defined. B. A state agency data protocol is being developed which will allow data to be collected in a consistent format. The protocol should be completed and shared.

4. The student level data collection instrument (KSEA) and the teacher observation report (KCP) resulted in a very rigid ceiling effect. That is, the overall readiness score for student level data (KSEA) with the highest frequency of occurrence (the mode) is the highest possible score. Over 1/3 of the student sample had a perfect score. Likewise, the teachers' modal average score for each classroom practice scale (KCP) ranged from 3.61 to 3.75, indicating that teachers' average scale scores were high. The modal response for individual items was 4 on the entire scale, indicating that teachers rated themselves very highly on this scale. While these may be considered a good findings to some, it represents a lack of discriminative ability and lack of sensitivity for the instruments. As a result, there is very little variability among students and teachers within a county and far less variability between counties. Without variability between counties, there is nothing to predict. KSDE staff have selected a new instrument to administer in the future through Riverside Publishing that should alleviate this problem by providing questions that are applicable to the high end of the distribution of students and by providing a wider range of response options. KSDE staff have refined and modified the KCP scales to provide greater variability in the data through improving the face and statistical validity of the items.

Recommendation: The state needs to continue to purchase the more valid instruments and to conduct training for teachers on both instruments, the KSEA and KCP.

5. Several of the findings reported below appear contrary to expectation. For instance, several aspects of readiness are paradoxically related to crime rate; counties with higher crime rates have students who are more ready for Kindergarten. One reason for this may be that the relationship captured in the data is merely a reflection of county population size (larger counties have more resources to promote early childhood development in addition to more crime and other less desirable characteristics).

Recommendations: Ensure sufficient data collection from every county so that county size can become one of the variables in the model.

Statewide Results of Student Performance

The demographic characteristics of the children in the state sample closely resemble the demographics of the state population of kindergartners: 50.1% female and 49.9 % male for the sample and 48.3% female and 51.7% male for the state; 41.9% on free or reduced price lunches for the sample and 42.2% for the state; 8.5% English as a second language for the sample and 9.55% for the state. The following are the state level results from teacher ratings and observations of student readiness on the KSEA.

Overall teachers reported the following:

- 47.4% were rated by the teacher to be prepared at the above average rate.
- 19% were rated as not prepared for kindergarten.

In general, teachers observed that the following percentage of participating kindergartners nearly always exhibited the identified skills or abilities in the following developmental areas:

- 65% exhibited physical readiness
- 42% exhibited the social skills needed
- 47% exhibited the ‘learning to learn’ skills needed
- 47% exhibited the symbolic development skills needed
- 43% exhibited the communication and literacy skills needed
- 53% exhibited the mathematical knowledge and skills needed

Similar to child level data, we have state level data related to teachers’ reports of classroom practices. The results for the KCP scale are as follows:

In general, teachers averaged 3.5 on a 4 point scale on all three scales: Physical Environment; Instructional context; Social Context. Looking at the results, kindergarten teachers reported that they are providing an appropriate learning environment as described by this survey.

- 60% rated themselves as ‘True’ in meeting the physical environment needs as described by the 12 items on the KCP scale.
- 68% rated themselves as ‘True’ in using appropriate instructional practices as described by the 17 items on the KCP scale.
- 60% rated themselves as ‘True’ in providing a social context that supports child learning as described by the 13 items on the KCP scale.

Results from Model

The following results should be interpreted with an understanding of the limitations of the data. First, while the statistical model used implies prediction, all relationships are fundamentally correlational analyses and results do not imply causation. For example, counties with higher rates of crime are also counties with higher levels of readiness. These counties may have more resources in the community that also contribute to child readiness for kindergarten. (Factor scores for each county are provided for the Community, Family, and School data goals; see Appendix B). The counterintuitive results below may be related to the current data measures, which may better represent county size rather than the conceptual indicator thought to promote

readiness. This can be counterbalanced in future research by improving data collection, improving assessment instruments, increasing the sample size of our larger counties, and insuring that data is collected from all smaller counties.

- Students within counties who are female, have a lower in BMI, are native English speakers, and are not eligible for free or reduced lunch; and students without disabilities tend to be more ready for Kindergarten with the following exceptions:
 - Native language status is not related to physical readiness.
 - Body-Mass Index is not related to social, symbolic, or math readiness.
 - Gender is not related to math readiness.
- Overall Readiness
 - Counties with children exhibiting higher levels of overall readiness also tend to have *significantly*:
 - Fewer child abuse claims
 - Fewer child care enforcement citations
 - Higher crime rate per capita
 - Lower student/teacher ratio in Elementary Schools
- Physical Development
 - Counties with children exhibiting higher levels of physical readiness also tend to have *significantly*:
 - Fewer mothers who receive adequate prenatal care
 - More credentialed primary providers
- Social Development
 - Counties with children exhibiting higher levels of social readiness also tend to have *significantly*:
 - More mothers with at least a high school education
 - Higher crime rate per capita
 - Higher percentage of schools with formal transition plans (preschool to Kindergarten)
- Learning Development
 - Counties with children exhibiting higher levels of learning readiness also tend to have *significantly*:
 - Higher crime rate per capita
 - Lower student/teacher ratio in Elementary Schools
- Symbolic Development
 - Counties with children exhibiting higher levels of symbolic readiness also tend to have *significantly*:
 - Higher rates of children immunized by age 2
 - Lower early childcare capacity per population under 5 years old
- Literacy Development
 - Counties with children exhibiting higher levels of literacy readiness also tend to have *significantly*:
 - Higher crime rate per capita

- Lower student/teacher ratio in Elementary Schools
- Math Development
 - Counties with children exhibiting higher levels of math readiness also tend to have *significantly*:
 - Higher crime rate per capita
 - Lower student/teacher ratio in Elementary Schools

Conclusions

This project is important to the state of Kansas. It is a unique and exciting project that has potential for enhancing the success of young children as they enter school. It is the first major state-wide project of its kind and has the potential to yield invaluable information on the contextual influences on early childhood development and school readiness.

This study represents what should be viewed as the initial attempt at a statewide data collection effort. These findings provide some insight into the phenomenon of Kindergarten readiness, but the study has several limitations. None of the limitations above appears fatal, but they are significant hindrances to the ability to generalize from results and to make specific recommendations for local and state policy makers.

Some of the current and potential uses are as follows:

- Results are currently being used as the framework for a state wide effort to develop a comprehensive plan for early childhood.
- School districts may be able to use the result to promote best practices in Kindergarten classrooms and to develop collaborative relationships with community child care providers to support children's success.
- In the future, communities may be able to utilize results to make decisions promoting better health care and education programs for young children and their families.

APPENDIX A

FAMILY GOAL: Children live in safe and stable families that support learning.

Indicator: Mothers receive adequate prenatal care.

Measures:

% of pregnant women who receive adequate prenatal care.

% of pregnant women who receive prenatal care beginning in the first trimester of pregnancy.

Indicator: Mothers are high school graduates.

Measure:

% of infants born to mothers with at least a high school degree

Indicator: Children live in homes free of violence.

Measures:

Number per 1000 of substantiated child victims of abuse and/or neglect, birth to 17 yrs. old

Number of children per 1,000 placed out-of-home (<18 yrs. old)

Indicator: Children live in families that can afford basic necessities.

Measure:

% of K-12 children receiving free and reduced price school lunch

Indicator: Children have regular access to health care services.

% of children are fully immunized by age 2

COMMUNITY GOAL: Children live in safe and stable communities that support learning, health, and family services.

Indicator: Early childhood programs are high quality.

Measure:

% of teachers in early childhood/ non public school preschool programs with a CDA, teacher license, or degree in early childhood

Number of childcare enforcement citations

Indicator: Early childhood programs are available.

Measure:

Child care capacity (licensed or registered programs)

Preschool capacity (licensed or registered programs, including public school programs)

Indicator: Early childhood programs are affordable.

Measure:

% of median monthly income used for infant/toddler care and preschool age child care

Indicator: Children live in safe and stable communities.

Measures:

Rate per 1,000 population of crimes against property and persons

SCHOOL GOAL: Children attend schools that support learning.

Indicator: Schools provide high quality learning environments.

Measures:

Average teacher/child ratio in K-1 classrooms.

% of children enrolled in all-day, every day Kindergarten

Indicator: Teachers provide high quality classroom learning environments.

Measures:

% of Kindergarten teachers with early childhood licensure or endorsement

Physical Environment Score

Instructional Environment Score

Social Context Score

Indicator: Schools have strong relationships with families and communities.

Measures:

% of schools with formal transition plans between early childhood settings and Kindergarten

% of school districts permitting after hours use of school buildings for community functions

APPENDIX B

Each county in the list below is followed by the factor score on each of the three goals (Family, Community, and School). Factor scores represent a standardized composite score which is created from the measured variables, based on all counties in Kansas. While the factor scores were not predictive of readiness in the School Readiness model, they do provide us with the ability to rank counties. Scores that fall between -1 and 1 are considered average scores. Those counties that have scores greater than 1, have scores above average and those that have scores less than -1, have scores that are in the below average range. While a factor score can be greatly influenced by one or more variables, general interpretations are possible. Caution should be used in making these interpretations and a review of data from other state agencies should be closely reviewed for any policy decisions.

General Interpretations of Example Family Factor Scores

A factor score of 1.5 on the Family factor indicates that on average the county has somewhat higher than average rates of mothers who receive adequate prenatal care, have more mothers with a high school education or greater, have fewer child abuse claims for children birth to 17 years of age, fewer out of home placements for children under 18, more toddlers immunized by age 2, and fewer families receiving free and reduced price lunches. The score can be caused by higher numbers on one or more of these variables. Conversely, a score of -1.5 on the Family factor indicates that the county has fewer mothers who receive adequate prenatal care, fewer mothers who have at least a high school education, more child abuse claims, more out of home placements, fewer toddlers immunized by age 2, and more families receiving free and reduced price lunch.

General Interpretations of Example Community Factor Scores

A factor score of 1.5 on the Community factor indicates that on average the county has a somewhat higher number of credentialed early childcare providers, fewer child care enforcement citations, greater early child care capacity, lower child care costs, and a lower crime rate. Again, the score may be affected by one or more of these variables and other state data sources should be consulted for specifics. A Community factor score of -1.5 would indicate that on average the county has fewer credentialed early child care providers, more child care enforcement citations, lower early child care capacity, higher child care costs, and a higher crime rate.

General Interpretations of Example School Factor Scores

A factor score of 1.5 on the School factor indicates that on average the county has a lower student-teacher ratio, more all day Kindergarten programs per Kindergartener, more teachers with early childhood licensure, higher scores on the KCP Physical Environment Scale, Instructional Environment Scale and Social Context Scale, more schools with formal transition plans, and more community usage of schools. Conversely, a School factor score of -1.5 indicates that on average the county has a higher student-teacher ratio, fewer all day Kindergarten programs per Kindergartener, fewer teachers with early childhood licensure, lower scores on the KCP scales, fewer schools with formal transition plans and less community usage of the schools. Please note, that the same cautions regarding specifics for data influences and interpretation should be used here.

<i>County</i>	<i>Family</i>	<i>Community</i>	<i>School</i>	<i>County</i>	<i>Family</i>	<i>Community</i>	<i>School</i>
Allen	-0.699	0.788	-0.939	Linn	0.554	1.018	0.845
Anderson	0.172	0.329	-0.069	Logan	0.45	1.779	0.529
Atchison	-0.197	0.243	0.712	Lyon	-0.582	-0.397	-0.183
Barber	-0.05	-2.076	-0.11	Marion	0.911	0.353	-0.018
Barton	-1.085	0.789	-1.196	Marshall	0.612	-0.042	-0.735
Bourbon	0.086	-0.801	-0.592	McPherson	1.272	-1.312	-0.672
Brown	-0.093	0.305	1.025	Meade	-0.867	-0.373	0.493
Butler	0.943	-0.358	-0.168	Miami	0.98	0.191	-1.452
Chase	0.193	0.663	-1.383	Mitchell	1.408	0.099	-0.104
Chautauqua	0.214	-0.023	0.528	Montgomery	-1.276	-0.373	-1.182
Cherokee	-1.485	0.211	-0.128	Morris	-0.433	-1.362	2.009
Cheyenne	-0.871	-0.413	1.012	Morton	-0.515	-0.149	-0.264
Clark	-0.842	-0.524	0.699	Nemaha	1.516	0.898	-0.117
Clay	0.243	1.649	-0.874	Neosho	-0.401	0.875	-0.496
Cloud	-0.044	0.946	-0.566	Ness	0.276	0.629	0.39
Coffey	1.148	0.83	-0.675	Norton	0.964	1.702	1.587
Comanche	0.367	-0.07	2.027	Osage	0.417	-0.172	-0.084
Cowley	-0.364	0.107	-0.333	Osborne	-0.043	-2.225	0.901
Crawford	-0.644	-0.642	-0.684	Ottawa	0.883	1.584	-0.853
Decatur	0.94	-0.487	1.556	Pawnee	-0.637	1.386	0.028
Dickinson	0.596	1.218	0.213	Phillips	0.344	0.436	-0.716
Doniphan	0.672	-0.486	-0.072	Pottawatomie	1.527	0.079	-1.474
Douglas	1.254	-0.548	-0.567	Pratt	-0.512	-1.086	0.594
Edwards	-1.041	2.179	0.414	Rawlins	-0.413	-0.244	0.65
Elk	-0.856	-1.129	0.502	Reno	-1.102	-0.753	-0.408
Ellis	0.819	0.714	0.931	Republic	0.622	-1.942	-0.074
Ellsworth	0.95	2.753	-0.1	Rice	-0.457	0.075	-1.541
Finney	-1.814	-2.028	-0.647	Riley	0.189	-0.705	0.076
Ford	-2.476	-1.783	-0.492	Rooks	0.642	-1.134	0.439
Franklin	-0.404	-1.265	-0.025	Rush	0.716	-0.397	-2.112
Gearry	-1.444	-1.934	-1.004	Russell	-0.929	0.412	0.266
Gove	0.172	1.223	0.724	Saline	-0.216	-0.529	-0.799
Graham	-1.162	2.787	1.586	Scott	0.398	-1.107	1.088
Grant	-0.718	0.778	-0.632	Sedgwick	-1.149	-0.777	-0.519
Gray	-0.898	0.93	0.416	Seward	-1.655	-2.575	-0.988
Greeley	-1.172	0.119	1.302	Shawnee	-0.071	-1.378	0.319
Greenwood	-0.584	0.919	-0.074	Sheridan	1.79	-0.089	0.6
Hamilton	-1.904	0.982	0.049	Sherman	-0.728	-0.176	-3.014
Harper	-0.812	0.085	0.437	Smith	1.763	0.972	-1.155
Harvey	0.34	0.625	-0.833	Stafford	-0.923	-0.214	0.222
Haskell	-1.014	-0.299	0.625	Stanton	0.115	-0.059	4.213
Hodgeman	0.13	-1.074	-0.223	Stevens	-0.388	0.526	0.732
Jackson	1.154	-0.153	-0.985	Sumner	-0.144	0.121	-0.353
Jefferson	1.091	-0.676	1.136	Thomas	0.597	0.273	-0.307
Jewell	0.998	0.908	0.412	Trego	0.513	0.512	-1.948
Johnson	2.498	-0.604	-0.756	Wabaunsee	2.488	0.186	-0.296
Kearny	-0.296	-0.144	0.164	Wallace	0.07	-0.227	-0.592
Kingman	0.97	0.102	-0.093	Washington	2.308	1.4	-0.429
Kiowa	-0.421	-0.381	2.137	Wichita	-0.173	-0.214	-0.715
Labette	-1.483	0.433	-0.026	Wilson	-0.198	0.504	1.389
Lane	0.543	-0.438	0.685	Woodson	-0.357	-0.877	0.829
Leavenworth	0.557	-0.039	-0.378	Wyandotte	-2.84	-0.553	-1.003
Lincoln	0.508	0.192	1.735				