m1 DEPARTMENT OF EDUCATION

Race to the Top: Early Learning Challenge Grant Project #8: Kindergarten Entry Assessment:

Transforming the School Readiness Study into the KEP Initiative

Background

Historically, Minnesota has conducted a School Readiness Study, using a single assessment tool to assess the readiness of Minnesota children as they enter kindergarten. This study was initiated in School Year (SY) 2002-03 and continued for 10 years. During this time, only one assessment tool was used - the Minnesota Adapted version of the Work Sampling System. Though the study was generally well received by the public and policymakers, teachers and administrators had concerns about how the assessments related to classroom instruction and how the effort fit into a broader assessment system.

In 2013, Minnesota was awarded a Race to the Top-Early Learning Challenge grant (RTT-ELC), which provided the state with an opportunity to improve on the state's kindergarten entry assessment model. National early childhood content experts and early learning and kindergarten teachers and administrators played integral roles in making recommendations about how to improve upon the state's earlier work on the School Readiness Study, which resulted in a new model, the Kindergarten Entry Profile (KEP).

The KEP is based on Minnesota's early learning standards, known as the Early Childhood Indicators of Progress (ECIPs), which provide a framework for a shared set of developmentally appropriate expectations for children ages birth to kindergarten and address the development and learning of all children, including typically developing children, dual language learners, children with disabilities, and children with high needs. The ECIPs define the foundational skills necessary to build toward the Minnesota K-12 Academic Standards and college- and career-readiness.

The state's long history of local control is honored by the KEP, as districts/charter schools are provided with a menu of high quality assessment tools which can be used to produce profiles of their entering kindergartners and support coherence in prekindergarten through third grade teaching and learning. According to a review of states by REL Midwest, kindergarten entry assessments are growing in prevalence. As of 2016, 25 states required a kindergarten entry assessment while other states were either phasing them in or, like Minnesota, making them voluntary (Pierson 2018). Minnesota's KEP model, however, is unique among states in that a single statewide profile of participating kindergartners can be produced even though districts/charter schools are using four different assessment tools. The KEP supports school administrators, educational leaders, and kindergarten teachers in measuring what children know and are able to do at the beginning of kindergarten to inform their practice and programming.

Data from the KEP can also be used by districts/charter schools to inform other initiatives, including World's Best Workforce plans and supporting coherence in prekindergarten through third grade

teaching and learning. The KEP, it should be noted, is not designed for evaluating teachers, developmental screening, or making high-stakes decisions about programs. This model represents a new vision for looking at what kindergartners know and are able to do that reflects advances in our understanding of child development, neuroscience, and early childhood assessment.

The KEP Initiative: Improving Upon the School Readiness Study

The primary goal of the KEP Initiative was to create a new standards-based kindergarten entry assessment model that was based on the recommendations made by the National Research Council in *Early Childhood Assessment: Why, What, and How*. Their recommendations included:

- aligning assessment tools to comprehensive learning standards;
- allowing multiple high-quality assessments that relate to one another;
- providing ongoing professional development to better understand assessment and the use of assessment data as it relates to data use and reporting; and,
- ongoing procedures to assess learning environments and inclusion practices (National Research Council 2008).

To meet these recommendations, the KEP initiative created an assessment system that includes a menu of tools from which districts can choose that are aligned to Minnesota's early learning standards, the *Early Childhood Indicators of Progress* (ECIPs), and offered training and technical assistance in how to select and administer the assessment tools, as well as how to use the data to inform daily instruction.

The Minnesota Department of Education (MDE) is able to cover the costs of the assessment tool for districts/charter schools that voluntarily participate in the KEP, though no more than 10 percent of kindergarteners in the state are able to participate due to budgetary constraints. Training is provided to teachers and administrators in their chosen tool and their district/charter school is reimbursed for the costs of the assessment tool at the state-negotiated rate. During the first 8-10 weeks of school, teachers use authentic assessment (observations) to document what their students know and are able to do. A lengthy observation period allows teachers to focus on their most important task at the start of school-building relationships with students and their families. At the end of the observation period, teachers enter their reflections into their online reporting tool. Participating in the KEP does not require changes in curricula nor does it require teachers to alter their instruction in order to assess their students (i.e., pulling students aside and ask them to perform certain tasks).

The KEP Pilot

The first three years of the KEP, SY 2012-13 through SY 2015-16, are considered "pilot years." The KEP pilot was necessary in order to allow a broad range of assessments to be reviewed in a multi-stage process. The intended outcomes of the pilot portion of the KEP were threefold:

1. Create a menu of assessment tools that underwent a rigorous review in order to ensure the assessment tool was aligned to the ECIPs.
2. Determine if and how the tools aligned to each other (i.e., how rigorous were the tools when compared to each other).
3. Create a kindergarten entry assessment system that could produce, no matter the KEP-approved assessment tool that was used, a profile of participating kindergartners that showed the percentage of kindergartners who were meeting or exceeding age expectations for each of the eight ECIP domains.

Phase one of the KEP pilot consisted of technical reviews of assessment tools, including: evidence of validity and reliability and appropriateness for diverse populations; psychometric analyses of item and score quality for each tool; statistical summaries of pilot data; and empirical alignment analyses. A detailed report, "Empirical Alignment of Assessments to Standards: A New Direction for Kindergarten Entry," outlines the findings from the first phase of the pilot (Cox et al. 2016).

Phase two of the KEP pilot included additional measurement analyses, as well as an analysis of the comparability of assessment tools (i.e., the relative rigor of each tool) through a process of concurrent calibration. In order to complete the comparability of assessment tools, a common-persons linking design was utilized (i.e., a group of students were assessed using two different assessment tools during the same time period).

Once both phases of the KEP pilot were completed in SY 2015-16, the focus shifted to implementation of the model based on the information and lessons learned from the pilot and efforts to increase participation in the KEP.

KEP-Approved Assessment Tools

In order to become a KEP-approved assessment tool, each tool had to undergo a rigorous review, which included publishers' claims regarding the tools' intended purposes, psychometric properties, administration guidance, and a validity and reliability assessment. Other criteria included, but was not limited to:

- local demand for the tool;
- alignment with the ECIPs and kindergarten academic standards;
- coverage across the domains of learning in the ECIPs;
- reliance on authentic assessment; and,
- the provision of real-time data to teachers and administrators to help guide instruction and programming based on the learning needs of their students.

The criteria that assessment tools rely on authentic assessment has important implications. The use of authentic assessment provides teachers with multiple opportunities to observe student knowledge and skills in a variety of natural educational settings as well as through work samples. Authentic assessment allows students to demonstrate skills verbally as well as non-verbally, which can be of particular importance for English learners and students who have significant delays or disabilities. For these reasons, many child development and assessment experts view authentic assessment as a more culturally and linguistically appropriate way to assess students.

As identified through a rigorous standards alignment review, the KEP approved assessment tools are:

- Developmental Milestones (also known as the FAST), published by FastBridge
- Desired Results Developmental Profile - Kindergarten (DRDP), published by WestEd and the California Department of Education
- Minnesota Version of the Work Sampling System - (MN-WSS), published by Pearson
- GOLD, published by Teaching Strategies

Summary of KEP Results

The results of the KEP initiative can be organized into two categories: (1) lessons learned about the KEP model; and, (2) annual profiles of the kindergartners from participating districts/charter schools. Though efforts have been made to obtain a representative sample of kindergartners, the voluntary nature of the KEP does not produce a representative sample of kindergartners across the state. In other words, the group of students whose district/charter schools participated in the KEP sample is not representative of any specific population across the state, including by special education status, race/ethnicity, free/reduced-priced lunch status, and English learner status. Because it is not representative of the general population, generalizations regarding the data should not be made (i.e., these numbers should not be taken as an accurate portrayal of the percentage of students meeting or exceeding age expectations statewide) and results should not be compared from year to year. Participants, however, may be able to compare their results from year to year and make generalizations about their district/charter school.

It is worth noting that during the three KEP pilot years (SY 2013-14, 2014-15, and 2015-16) the sample size is relatively small, ranging from 0.7 percent to 1.1 percent of kindergartners statewide. This is not a concern, though, given the pilot status of the KEP. Additionally, the level of funding for the KEP has always, much like the School Readiness Study, meant that only a small number of districts/charter schools would be able to participate. Due to budgetary constraints, the KEP can reach no more than 10 percent of kindergarteners in the state.

Lessons Learned About the KEP Model:

Through the pilot process, MDE has learned that the KEP model is viable. That is, MDE successfully developed a new standards-based assessment model that honors local control via a menu of high-quality tools that can be used to produce a profile of kindergartners and support coherence in pre-k to third grade teaching and learning. The model also has the potential to be expanded to include new assessment tools as necessary and to be updated should a new version of the ECIPs be released, though additional funding would be necessary. This work was completed with input from a diverse group of early learning experts, including teachers and administrators from the districts/charter schools who voluntarily participated in the KEP.

Teachers and administrators have also started the important process of building their capacity to implement standards-based assessment, which includes discussions centered on which students need more support based on their assessment data. Another benefit of the KEP is that assessment tool trainings have brought prekindergarten and kindergarten teachers together, providing them with the joint opportunity to engage in conversations centered on shared expectations of student outcomes, aligning instruction and curriculum across grades/ages, and strengthening transitions to kindergarten.

Annual Profiles of the Kindergartners from Districts/Charters Participating in the KEP

Research, including work completed by the Federal Reserve Bank of Minneapolis (Grunewald 2016), has demonstrated that high-quality early learning experiences can improve child and family outcomes, particularly for traditionally underserved children and families. High-quality early learning experiences also provide a high return on investment (Grunewald and Rolnick 2010). The impact these experiences can have on a young child is backed by a growing body of neuroscience that confirms the considerable growth of a child's brain during their early years (Institute of Medicine 2000). Information about kindergartners' skills and knowledge across the domains of learning is crucial information that teachers

need in order to tailor instruction to the needs of each student. Research also validates that well-planned and effective assessment can be used to tailor instruction to the needs of each student, strengthen programming, and improve student outcomes. There is a growing belief that one important element of early childhood education systems reform is the appropriate assessment of young children.

Minnesota's statutory definition of "ready for kindergarten" is that a child: (a) is at least 5 years of age by September 1 of the child's enrollment year (120A.20); (b) has received an early childhood screening (121A.17); and, (c) has received medically acceptable immunizations (121A.15). The new KEP model, however, expands on this definition and represents a more holistic view that schools must be prepared to support and respond to each child's individual needs given that they arrive with varying knowledge and skills across the domains of learning based on their own unique identities and experiences. The KEP reports data by each of the ECIP domains of learning: Approaches to learning; the arts; language, literacy, and communications; mathematics; physical and movement development; scientific thinking; social and emotional development; and social systems. In this way, the KEP represents a whole-child view of development and are inclusive of the wide range of experiences, skills and knowledge of Minnesota's kindergartners. Reporting data by ECIP domain also makes the data more actionable and valuable to teachers and leaders.
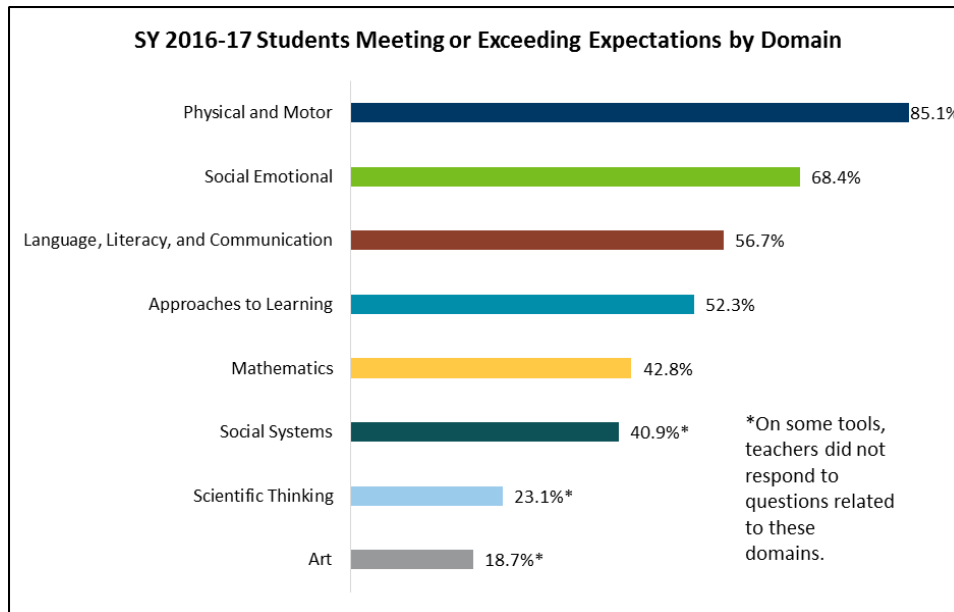
Determining Whether Students are Meeting or Exceeding Age Expectations by ECIP Domain

Each of the KEP approved assessment tools defines the domains of learning slightly differently. The work completed during the KEP pilot helped us understand not only how well the assessment tools aligned to the ECIPs, but also provided a way to compare the relative rigor of the different assessment tools. As a result, we are able to produce one annual profile of all the participants in the KEP even though four different assessments were used. This profile, which is not representative of the state, illustrates the percentage of students in the KEP sample were "meeting or exceeding age expectations" for each of the eight ECIP domains.

Of note, the art, science, and social systems domains likely underestimated the percentage of students meeting or exceeding age expectations due to a large number of items not being completed by teachers during the early years of implementation in these domains. In the SY 2013-14 data reported, no data were collected in the science and social science domains and are, therefore, not reported.

Though it would seem natural to compare the outcomes year-to-year, the aforementioned concerns about the lack of representativeness of the KEP participants would result in flawed conclusions about the learning profile of kindergartners across the state. As mentioned earlier, individual districts/charter schools may be able to make year-to-year comparisons and make generalizations about the kindergarteners in their district/charter school.

Figure 1: Percent of KEP students meeting or exceeding age expectations by ECIP domain on the KEP in SY 2016-17 (NOTE: the KEP sample is not representative of the state and results should not be compared from year to year)

SY 2016-17 Students Meeting or Exceeding Expectations by Domain

Domain	Percent
Physical and Motor	85.1%
Social Emotional	68.4%
Language, Literacy, and Communication	56.7%
Approaches to Learning	52.3%
Mathematics	42.8%
Social Systems	40.9%*
Scientific Thinking	23.1%*
Art	18.7%*

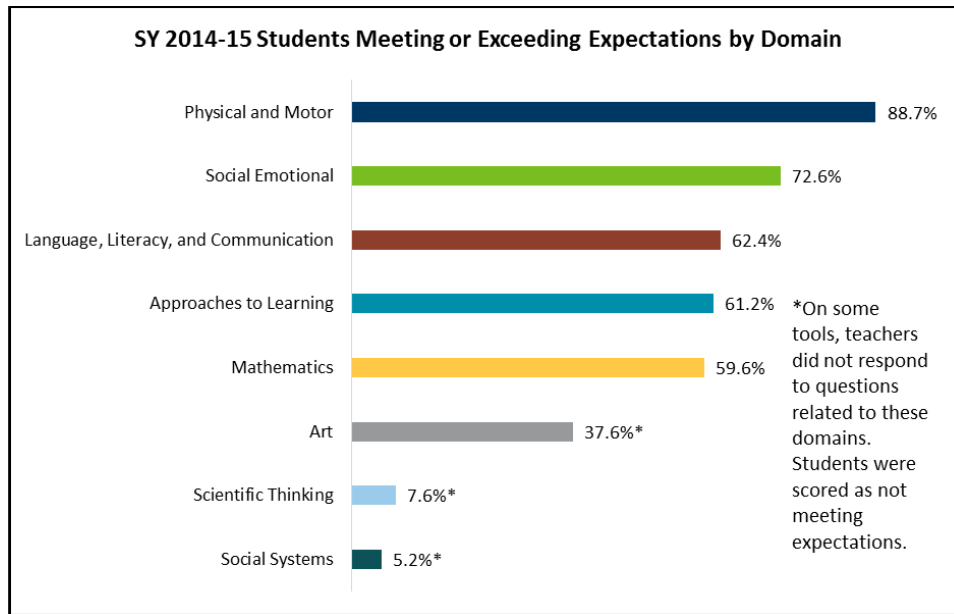*On some tools, teachers did not respond to questions related to these domains.

NOTE: In SY 2016-17, 5.7 percent of kindergartners, statewide, were in districts/charter schools that volunteered to participate in the KEP. This was not a KEP pilot year.

Figure 2: Percent of KEP students meeting or exceeding age expectations by ECIP domain on the KEP in SY 2015-16 (NOTE: the KEP sample is not representative of the state and results should not be compared from year to year)

SY 2015-16 Students Meeting or Exceeding Expectations by Domain

Domain	Percent
Physical and Motor	82.7%
Social Emotional	69.9%
Mathematics	56.9%
Language, Literacy, and Communication	56.8%
Approaches to Learning	52.6%
Art	24.3%*
Social Systems	10.9%*
Scientific Thinking	8.8%*

*On some tools, teachers did not respond to questions related to these domains. Students were scored as not meeting expectations.
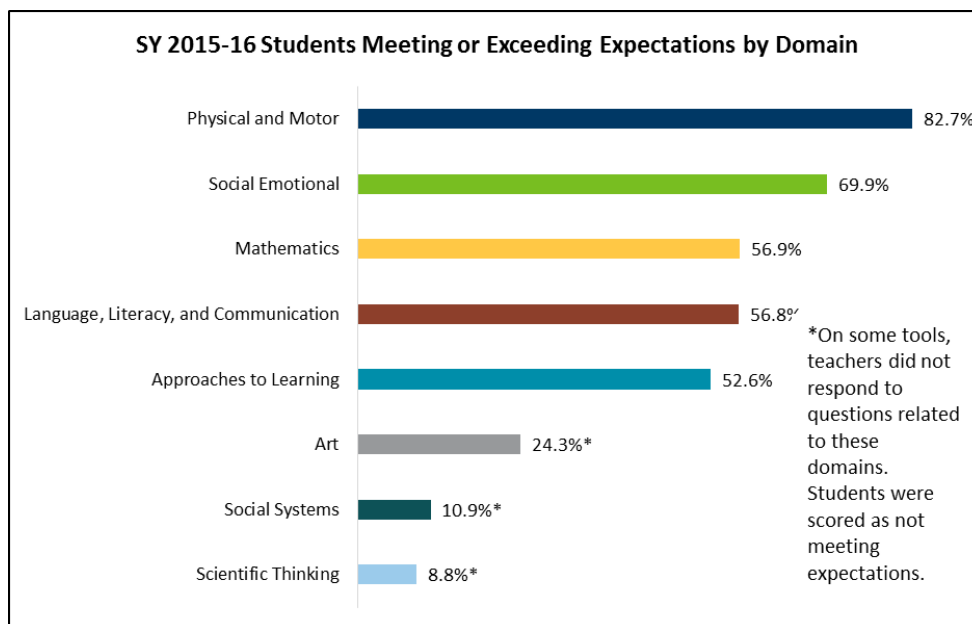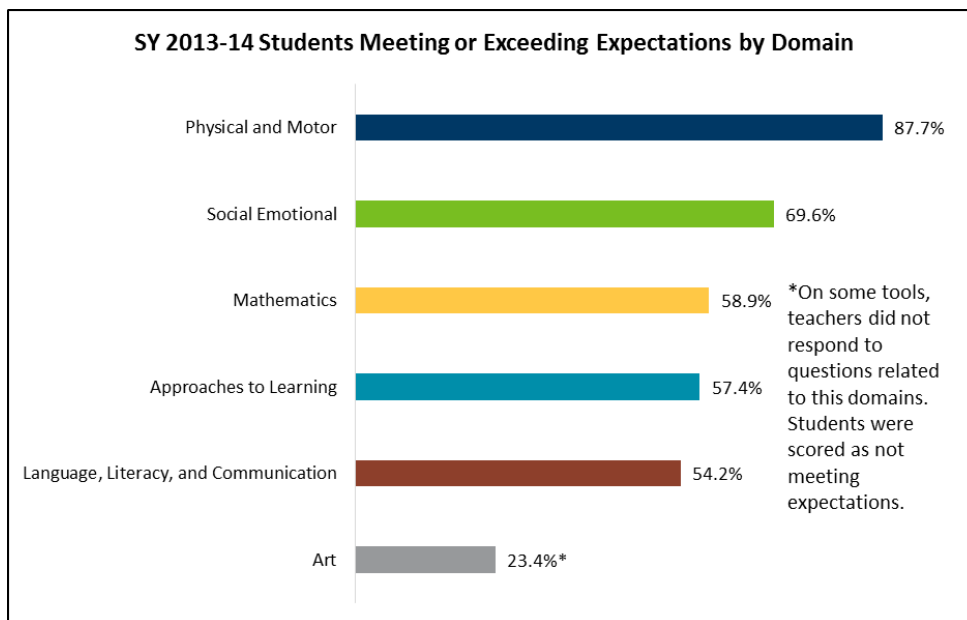
NOTE: In SY 2015-16, 1.1 percent of kindergartners, statewide, were in districts/charter schools that volunteered to participate in the KEP. This was the third of three KEP pilot years.

Figure 3: Percent of KEP students meeting or exceeding age expectations by ECIP domain on the KEP in SY 2014-15 (NOTE: the KEP sample is not representative of the state and results should not be compared from year to year)

SY 2014-15 Students Meeting or Exceeding Expectations by Domain

Domain	Percent
Physical and Motor	88.7%
Social Emotional	72.6%
Language, Literacy, and Communication	62.4%
Approaches to Learning	61.2%
Mathematics	59.6%
Art	37.6%*
Scientific Thinking	7.6%*
Social Systems	5.2%*

*On some tools, teachers did not respond to questions related to these domains. Students were scored as not meeting expectations.

NOTE: In SY 2014-15, 0.8 percent of kindergartners, statewide, were in districts/charter schools that volunteered to participate in the KEP. This was the second of three KEP pilot years.

Figure 4: Percent of KEP students meeting or exceeding age expectation by ECIP domain on the KEP in SY 2013-14 (NOTE: the KEP sample is not representative of the state and results should not be compared from year to year)

SY 2013-14 Students Meeting or Exceeding Expectations by Domain

Domain	Percent
Physical and Motor	87.7%
Social Emotional	69.6%
Mathematics	58.9%
Approaches to Learning	57.4%
Language, Literacy, and Communication	54.2%
Art	23.4%*

*On some tools, teachers did not respond to questions related to this domains. Students were scored as not meeting expectations.

NOTE: In SY 2013-14, 0.7 percent of kindergartners, statewide, were in districts/charter schools that volunteered to participate in the KEP. This was the first of three KEP pilot years.

Conclusion

MDE successfully developed a new, innovative, standards-based assessment model that honors local control via a menu of high-quality tools that can be used to produce a profile of kindergartners and support coherence in prekindergarten through third grade teaching and learning. This approach is flexible in that districts/charter schools may choose from a menu of assessment tools and feel confident that they have chosen a high-quality tool that spans each of the eight domains of learning, as outlined by the ECIPs. This flexibility honors Minnesota's longstanding tradition of local control, allowing districts/charter schools to choose the assessment tool that they feel best meets the needs of their community. The data produced from the KEP can be used by districts/charter schools to guide their practice and programming, as well as inform their World's Best Workforce plans. Statewide generalizations regarding the data should not be made, and results should not be compared from year to year because the sample is not representative of the state. Below are recommendations that would allow us to continue to strengthen and improve the KEP for families, teachers, administrators, policymakers, and other early learning stakeholders.

Recommendations

1. Fund full participation of all districts/charter schools in the KEP. This would allow the state to obtain an accurate statewide profile and create the conditions needed for year-to-year comparisons of data, leading to more meaningful dialogue about the learning profiles of kindergarteners. This expansion to all districts/charter schools must phased in over a two- to three-year process.

2. Continue to provide initial training and coaching, not only in the administration of the assessment tools, but in the use of the results to inform instruction.

3. Provide differentiated support to teachers, administrators, and research/data coordinators to deepen their understanding and use of the assessment tools to improve teaching and learning and strengthen programming and supports.

4. Allocate funding to enhance KEP analytics in the Early Childhood Longitudinal Data System, a resource that can help answer questions about young children and their development and learning while protecting students' privacy.

5. Provide technical resources, training and support so that district/charter profiles are accessible and actionable to teachers and administrators.

6. Create additional opportunities for training and collaboration between early childhood educators, kindergarten teachers (early childhood programs and districts/charter schools), and parent educators to improve assessment literacy, strengthen transitions to kindergarten, and promote a coherent prekindergarten through third grade assessment system.

7. Conduct outreach with the state's institutions of higher education and other workforce partners to increase the awareness and understanding of the ECIPs and their role in a standards-based assessment system.

8. Identify future research opportunities to examine outcomes relative to children's prior experiences and outcomes in third grade.

Appendix A: KEP Demographics by Year

Data were collected and are reported for the school years (SY) 2013-14, 2014-15, 2015-16 and 2016-17. For data reporting, GOLD and MN-WSS are included in results for all years. The DRDP is included for results in SY 2014-15 through 2016-17. DevMilestones (also known as the FAST) is only included in results for SY 2015-16 and 2016-17. The differences in years reported is related to timing of piloting, changes occurring in the assessment items, and districts/charter schools opting to only use certain tools.

The data reported are for a small, non-representative sample of Minnesota kindergarteners: 448 students in SY 2013-14, 503 students in SY 2014-15, 715 students in SY 2015-16, and 3,590 in SY 2016-17. These represent 0.7 percent, 0.8 percent, 1.1 percent, and 5.7 percent of all public school kindergarteners in Minnesota, respectively.

In all years, the proportion of males and females included in the KEP closely mirrored the overall kindergarten population (see Figure 5). As noted earlier, caution must be taken when analyzing the results because the group of students participating in the KEP is not representative of the general population; therefore, generalizations regarding the data should not be made and results should not be compared from year to year.

*Figure 5: KEP participants and kindergarteners statewide, by sex*
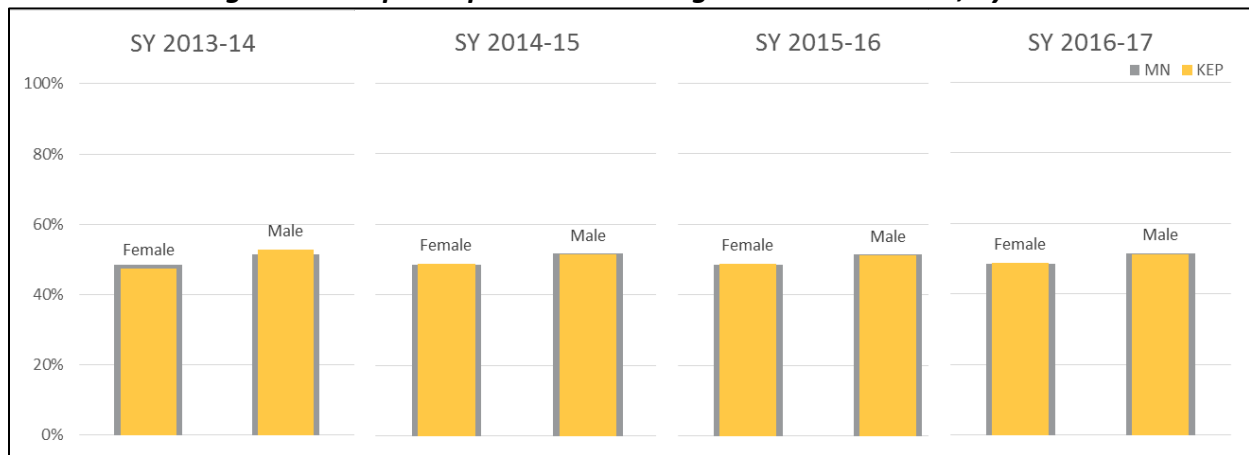
In SY 2013-14 and SY 2015-16, the proportion of students receiving special education included in the KEP was less than the overall kindergarten population, but was higher than the overall kindergarten population in 2015. In 2017, the sample was fairly representative of the state. As noted earlier, caution must be taken when analyzing the results because the group of students participating in the KEP is not representative of the general population, therefore generalizations regarding the data should not be made and results should not be compared from year to year.

Figure 6: Represents percent of students receiving special education services who participated in the KEP compared to the percentage of statewide kindergarten students receiving special education programs
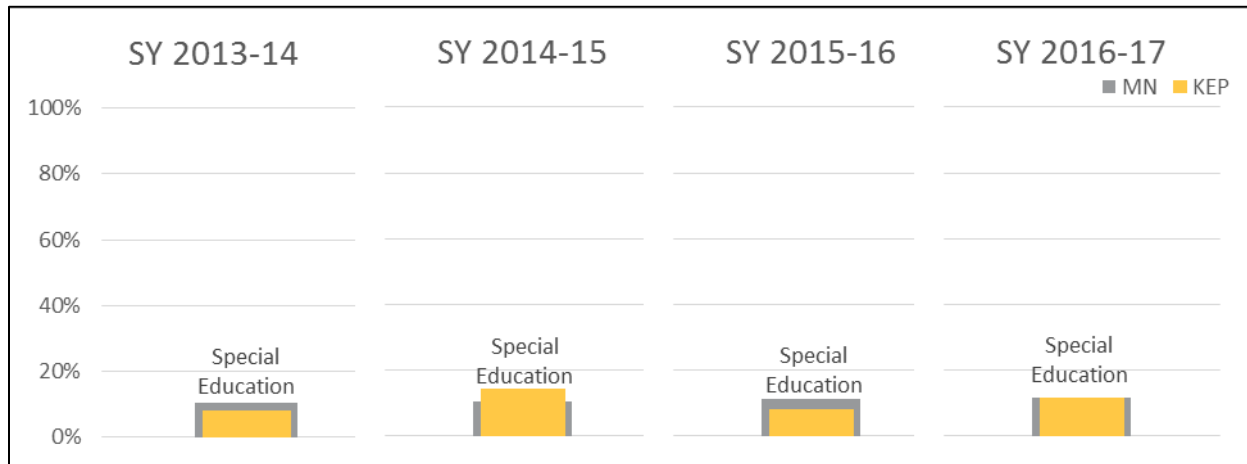

For reporting of race/ethnicity, students were classified into one of six federal race codes. These codes are Hispanic, American Indian, Asian, black, Native Hawaiian/Pacific Islander and white. Students can be counted in more than one of these categories for reporting purposes. Because there were fewer than 10 students who were Native Hawaiian/Pacific Islander for all years of data, that group is not reported. In all years, KEP participants were disproportionately white students. In SY 2013-14 and SY 2014-15, the American Indian group was also overrepresented in the sample. In all years, Asians and blacks were underrepresented, while Hispanics were underrepresented in SY 2013-14, SY 2014-15, and SY 2015-16 and slightly overrepresented in SY 2016-17. As noted earlier, caution must be taken when analyzing the results because the group of students participating in the KEP is not representative of the general population, therefore generalizations regarding the data should not be made and results should not be compared from year to year.

Figure 7: KEP participants and kindergartens statewide, by race/ethnicity categories
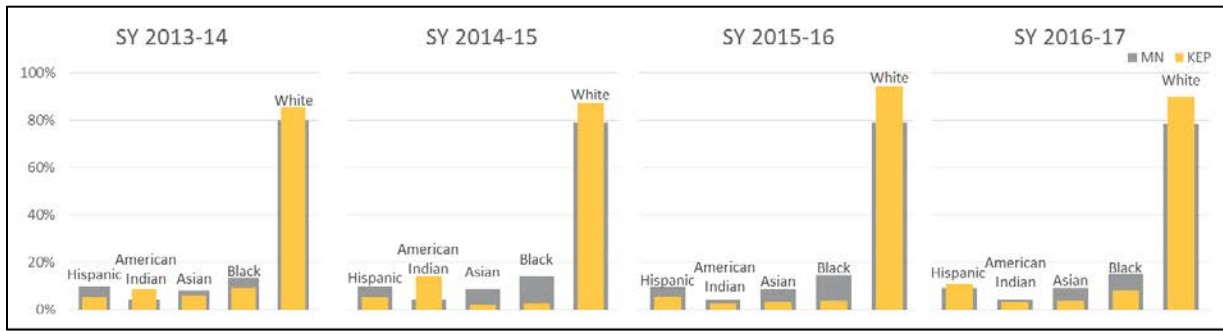
In SY 2013-14 and SY 2014-15, the proportion of students receiving free/reduced-priced lunch (FRP) in the KEP sample was close to the state percentage in kindergarten. However, in SY 2015-16 and SY 2016-17, the sample was much less likely to be receiving FRP than Minnesota kindergarteners. As noted earlier, caution must be taken when analyzing the results because the group of students participating in the KEP is not representative of the general population, therefore generalizations regarding the data should not be made and results should not be compared from year to year.

Figure 8: Percent of KEP students eligible for free/reduced-priced lunch (FRP) compared to the statewide FRP kindergarten population
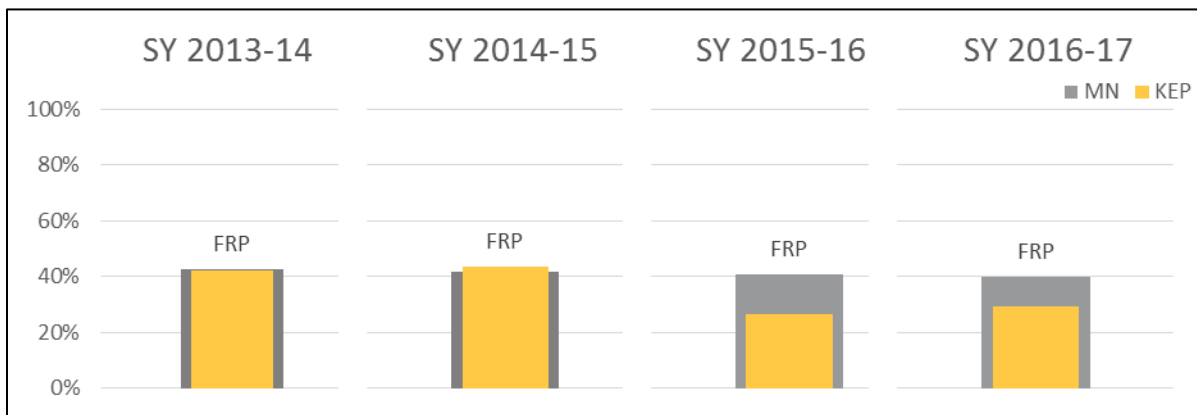
In all years, the KEP sample had a very low proportion of English learner students, especially relative to the population of Minnesota kindergartners. As noted earlier, caution must be taken when analyzing the results because the group of students participating in the KEP is not representative of the general population, therefore generalizations regarding the data should not be made and results should not be compared from year to year.

Figure 9: Percent of English learner students who participated in the KEP compared to the statewide English learner kindergartener population
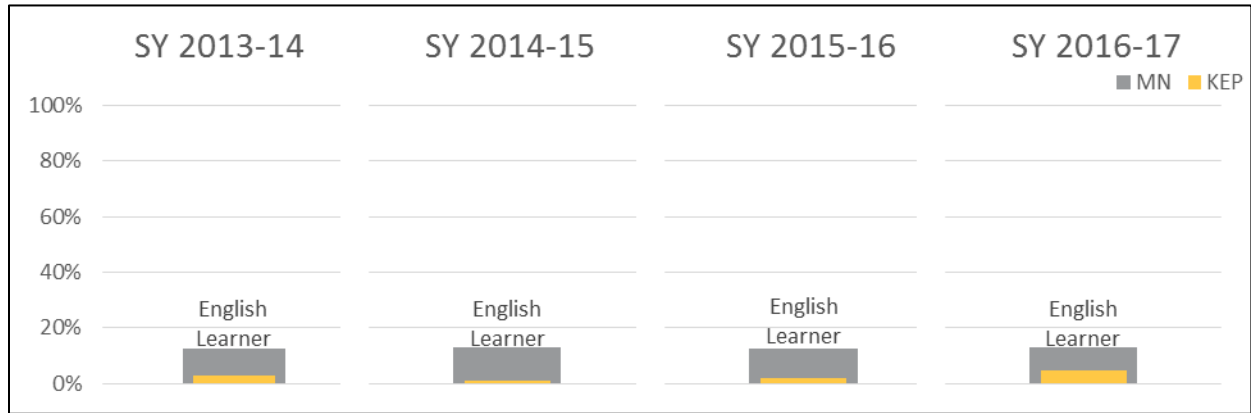

Table 1 in Appendix B displays the counts and percentages represented in Figures 5-9.

Appendix B: Student Demographics, Pilot Samples

Table 1: Represents counts and percentages of student characteristics for students who participated in the KEP compared to all kindergartners in public schools in Minnesota

School Year	Student Group	Count KEP	Percent KEP	Count All Kindergarten	Percent All Kindergarten
2013-14	Female	212	47.3%	31,815	48.5%
2014-15	Female	245	48.7%	31,152	48.3%
2015-16	Female	349	48.8%	30,836	48.5%
2016-17	Female	1747	48.7%	30,736	48.6%
2013-14	Male	236	52.7%	33,784	51.5%
2014-15	Male	258	51.3%	33,285	51.7%
2015-16	Male	366	51.2%	32,743	51.5%
2016-17	Male	1843	51.3%	32,543	51.4%
2013-14	Special Education	37	8.3%	6,772	10.3%
2014-15	Special Education	73	14.5%	6,723	10.4%
2015-16	Special Education	59	8.3%	7,111	11.2%
2016-17	Special Education	417	11.6%	7,283	11.5%
2013-14	Hispanic	24	5.4%	6,402	9.8%
2014-15	Hispanic	26	5.2%	6,222	9.7%
2015-16	Hispanic	39	5.5%	6,085	9.6%
2016-17	Hispanic	390	10.9%	5,664	9.0%
2013-14	American Indian	39	8.7%	2,638	4.0%
2014-15	American Indian	71	14.1%	2,675	4.2%
2015-16	American Indian	19	2.7%	2,629	4.1%
2016-17	American Indian	124	3.5%	2,550	4.0%
2013-14	Asian	26	5.8%	5,334	8.1%
2014-15	Asian	10	2.0%	5,547	8.6%
2015-16	Asian	24	3.4%	5,464	8.6%
2016-17	Asian	135	3.8%	5,785	9.1%
2013-14	Black	41	9.2%	8,836	13.5%
2014-15	Black	14	2.8%	9,116	14.1%
2015-16	Black	27	3.8%	9,091	14.3%
2016-17	Black	294	8.2%	9448	14.9%
2013-14	White	383	85.5%	52,494	80.0%
2014-15	White	439	87.3%	50,971	79.1%
2015-16	White	676	94.5%	50,284	79.1%
2016-17	White	3224	89.8%	49,630	78.4%
2013-14	English Learner	12	2.7%	8,253	12.6%
2014-15	English Learner	6	1.2%	8,349	13.0%
2015-16	English Learner	15	2.1%	8,110	12.8%
2016-17	English Learner	175	4.9%	8,127	12.8%

School Year	Student Group	Count KEP	Percent KEP	Count All Kindergarten	Percent All Kindergarten
2013-14	Free/Reduced-Priced Lunch (FRP)	188	42.0%	27,986	42.7%
2014-15	Free/Reduced-Priced Lunch (FRP)	218	43.3%	26,997	41.9%
2015-16	Free/Reduced-Priced Lunch (FRP)	188	26.3%	25,982	40.9%
2016-17	Free/Reduced-Priced Lunch (FRP)	1049	29.2%	25,225	39.9%

Appendix C: Acknowledgements

The Minnesota Kindergarten Entrance Profile (KEP) Initiative was planned, implemented and the report prepared by the Minnesota Department of Education (MDE).

Special thanks to all those who participated in the KEP study over the last several years, including early childhood educators, kindergarten teachers, principals, administrators, support staff, superintendents and executive directors, and the assessment tool trainers.

All analyses in this report were conducted by the Minnesota Department of Education.

For questions or more information, email Jon Vaupel.

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