Annual Evaluation of Pre-Kindergarten Education Programs to Promote Optimum Outcomes for Children and to Collect Data that Will Inform Future Decisions

Response to 16 VSA Sec 829(e)(10)

[Amended 2015 Act 11 Sec 13. Restart 5-yr clock at 2015]

REPORT

May 2019

Report to the General Assembly

Submitted by:

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VERMONT AGENCY OF EDUCATION
AGENCY OF HUMAN SERVICES

Executive Summary

Act 166 (Universal PreK) was enacted on May 10, 2014. Universal PreK is jointly administered by Agency of Education (AOE) and Agency of Human Services (AHS), Department for Children and Families (DCF). In 2015-16, approximately one-third of Supervisory Unions and Supervisory Districts (SUs/SDs) implemented Universal PreK with two-thirds waiting until 2016-17 to begin full implementation. Many systems that decided to delay full implementation continued to voluntarily offer publicly funded prekindergarten authorized under pre-existing law. School systems that fully implemented Act 166 in 2015-16 were called 'early adopters'. Only one third of school systems implemented Universal PreK that year. The data in this report reflect PreK participation in the 2017-18 school year, which represents the second year of full implementation of Act 166. Data quality are still in need of improvement, and therefore caution is advised in drawing conclusions based on these first years of PreK implementation.

Analysis of data from the second year of full implementation reveals the following:

Enrollment:
1. **Table 1 and Graphic 1:** Publicly funded enrollment in PreK increased by 2,669 students from 2014-15 to 2016-17 with the full implementation of Act 166. The 2017-18 school year showed a slight decrease in enrollment from the prior year (-135) suggesting that the growth spurred by Act 166 may be "leveling off."
2. **Table 2:** In 2017-18, 44% of all students enrolled in publicly funded PreK were enrolled in Supervisory Unions/Districts in the Champlain Valley.
3. **Table 3:** The distribution of students enrolling in publicly funded PreK in terms of eligibility for Free and Reduced Lunch (FRL)[1], special education (Individual Education Plan or IEP), and in terms of race/ethnicity in 2017-18 appears consistent with enrollment patterns in previous years.
4. **Table 4:** PreK enrollments continue to suggest that students eligible for FRL are under-enrolled in PreK compared to other grade levels. However, when those students enroll in Kindergarten the next year, FRL eligibility aligns to other grade levels. This suggests that FRL eligibility may not be accurately captured in the PreK enrollment process.
5. **Table 5:** During 2017-18, 90% of all prequalified PreK programs fully met Act 166 quality standards.
   a. The total number of participating PreK programs saw a net increase of 24 programs.
   b. In 2017-18 there were:
      i. 204 prequalified 5-star PreK programs, including 81 public and 123 private programs
      ii. 161 prequalified 4-star PreK programs, including 56 public and 105

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[1] The National School Lunch Program provides free or reduced-price lunch benefits to families based on income eligibility guidelines.

private programs
    iii.   42 3-star PreK programs, including 9 public and 33 private programs

Finances:

1. **Table 6:** Compared to the 2016-17 schoolyear, the 2017-18 total expenditures for publicly funded PreK increased by $815,448 and expenditure per child increased by $203.
2. **Table 7:** The vast majority of funds for PreK were expended on special and general education direct instruction services (73%) and student support services (11%). In addition, school systems spent, on average, $7,407 per student in 2017-18. This figure includes PreK tuitions districts pay to other public districts and private providers.
3. **Table 8:** Per student expenditures by the SUs/SDs for direct instruction in 2017-18 varied across regions from a low of $6,501 in the Southwest to a high of $9,544 in the Northeast. Per student expenditures for direct instruction increased across all five regions, ranging from approximately a $1,200 increase per child in the Champlain Valley to a $3,200 increase per child in the Northeast.

Educational Findings and Child Outcomes:

1. **Table 9 and 10:** Overall, a similar number of PreK students in the sample group met, or exceeded, expectations for literacy and math skills on the end of year assessment Teaching Strategies Gold (TSGOLD). Potential gaps in achievement of expectations were evident for several student groups.
    a. 88% of PreK students in the sample group either met or exceeded expected Literacy Achievement Levels in the spring TSGOLD assessment.
    b. 86% of PreK students in the sample group either met or exceeded expected Math Achievement Levels in the spring TSGOLD assessment. This is an increase of nearly 8% more children meeting the expected level than in 2016-17.
    c. TSGOLD achievements vary by free and reduced lunch eligibility, special education status and racial/ethnic background such that achievement gaps appear evident in the publicly funded PreK population.

2. **Table 11:** Performance on TSGOLD in both math and literacy is similar for programs that have 4 or 5-STARS, a rating based on Vermont's Step Ahead Recognition System or National Association Education of Young Children (NAEYC) accreditation. The Agencies are cautious about drawing conclusions based on these data at this time as the STARS program is undergoing revision.
3. **Table 12:** The performance of 3, 4 and 5-year old children on the literacy and mathematics assessments vary by age, with progressively greater proportions of children exceeding their age-based expectations by age 5. On the literacy assessment, there is variation across ages among those children who do not meet expectations. On the mathematics assessment, there is a greater percentage of 5-year-old children who do not meet age-based expectations, as compared to 3 and 4-year old children.

Recommendations:

1. **Additional technical assistance re: data collection:** The capacity to evaluate impacts of Act 166 in this report is limited by inconsistencies in data reporting by PreK programs. 2017-18 produced more accurate and complete data than the prior year, however improvements are still required. The AOE and AHS should continue to provide guidance and technical assistance for prequalified public and private PreK program staff and administrators to refine data collection processes and systems to generate more consistent, reliable and accurate data.

2. **Additional technical assistance re: TSGOLD administration:** Child progress as measured by TSGOLD is influenced by the reliability of classroom teachers in conducting regular observations and accurately reporting student skill and proficiency. AOE requires additional support to effectively offer and implement annual training and technical assistance on TSGOLD administration to school districts and partnership program staff.

3. **Additional support for TSGOLD vendor and data infrastructure management is required:** As with any critical data collection where a vendor is involved, the relationship must be managed to ensure effective and efficient data collection and management. This enables data use with lower levels of administrative and operational overhead. AOE requires additional support to effectively manage the vendor relationship and the data infrastructure required for supporting early childhood work.

4. **Continued collaboration between the AOE and AHS on data collection:** It is critical for accountability and evaluation of Act 166 that SU/SD's and private providers collect and report timely and consistent data. The AOE and the AHS will continue to ensure that all participants comply with data collection protocols. Appropriate workflow burden across agencies should be evaluated for equity and adjustments in staffing should be considered as appropriate.

5. **Continued collaboration between AOE and AHS on the PreK Monitoring System:** Collaboration between AOE and AHS is essential to ensuring a PreK Monitoring System is approved and operational for the 2019-2020 school year. This system will monitor all public and private PreK programs' accountability and compliance with Act 166 standards. AOE requires additional support to effectively manage and implement a joint agency PreK Monitoring System.

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Report Organization

1. Legislation Summary- A description of Act 166 and background information related to Act 166
2. Evaluation Methods- A description of the strategies employed in evaluating the current data.
3. Section 1: A description of the PreK student enrollment to give a broad overview of the current demographic characteristics in this grade and where prequalified public and private PreK programs are operating across the state.
4. Section 2: A description of the financial expenditures made in PreK at the district level. (Note: these analyses do not include state level transaction costs.)
5. Section 3: The third section only provides analysis describing students in programs who do not meet, meet or exceed expectations on TSGOLD assessment.
6. Section 4: Specific recommendations for improving the capacity to evaluate the impact of universal PreK.

Legislation Summary

[Act 166 of 2014](). *An act relating to providing access to publicly funded PreK education.*

Introduction:

Act 166 (Universal PreK) of 2014 requires the establishment of a system by which the AOE and the AHS/CDD (Child Development Division) shall jointly monitor and evaluate publicly funded PreK education programs to promote optimal outcomes for children and to collect data that will inform future decisions. The Agencies are required to report annually to the General Assembly in January. At a minimum, a system shall monitor and evaluate:

(A) programmatic details, including the number of children served, the number of private and public programs operated, and the public financial investment made to ensure access to quality PreK education;

(B) the quality of public and private PreK education programs and efforts to ensure continuous quality improvements through mentoring, training, technical assistance and otherwise; and

(C) the outcomes for children, including school readiness and proficiency in numeracy and literacy.

Act 166 has an effective date for Universal PreK enrollments of July 1, 2015. The law was enacted on May 10, 2014. The implementation of the law required the promulgation of administrative rules by the Vermont State Board of Education, and the timeline for adoption of the rules extended through September 2015. On November 25, 2014, an AOE/AHS memo was issued allowing school districts to choose to implement Act 166 as of July 1, 2015, or to wait one (1) year with full implementation July 1, 2016. Just under a third of school districts moved forward with implementing Universal PreK in the 2015-16 school year. School systems that fully implemented Act 166 in 2015-16 were referred to as "early adopters."

At this time, much has been learned about the strengths, limitations and quality of existing

data sets. Specific areas have been identified for improvement and plans have been laid to achieve those goals.

Act 166 Basics:
1. Beginning in Fall 2016, all School Districts are mandated to *offer* publicly funded PreK to resident families who voluntarily enroll their child in a prequalified public or private PreK program.
2. All Vermont children who are three, four, or five years of age by the date established by the district of residence for Kindergarten eligibility, and who are not yet enrolled in Kindergarten, are eligible for this funding.
3. PreK is defined as at least 10 program hours per week, 35 weeks per year (during the school year).
4. Publicly funded PreK can be provided in prequalified public school-operated PreK programs or prequalified community-based private programs (family childcare home and licensed center-based childcare).

Criteria for Prequalified PreK Programs:
Act 166 (Universal PreK) legislation and Rules require that a public school or private PreK education program shall be considered prequalified only if it meets all of the following criteria:
1. The public or private program receives and maintains at least one of the following quality program recognition standards:
    a. National accreditation through the National Association for the Education of Young Children (NAEYC);
    b. A minimum of four stars in Vermont's Step Ahead Recognition System STARS program, with at least two points in each of the five arenas:
        i. Regulatory History
        ii. Staff Qualifications
        iii. Families and Communities
        iv. Program Practices
        v. Administration;
    c. Three stars in Vermont STARS if the program has a plan approved by the DCF Commissioner and the Secretary of Education to achieve four or more stars within two years, including at least two points in each of the five arenas.
2. The public or private program is currently licensed or registered, as applicable, by the DCF, and is in good regulatory standing;
3. The public or private program's curricula are aligned with the Vermont Early Learning Standards (VELS);
4. PreK students will have access to qualified, licensed teachers with an endorsement in either early childhood education or early childhood special education:
    a. Prequalified public school-operated PreK programs must employ or contract with a licensed early childhood educator (ECE) or early childhood special educator (ECSE) per classroom to provide 10 hours of direct PreK instruction for 35 weeks of the academic school year.

b. Prequalified private programs that are center-based must have at least one AOE licensed ECE or ECSE present and on site during the 10 hours per week across 35 weeks of the academic school year in which publicly funded PreK education is offered to families.

c. Prequalified private programs that are registered or licensed family childcare home providers must employ or contract with a licensed early childhood educator or early childhood special educator in one of the following ways:

    i. The owner/operator holds a valid AOE license in the required endorsement area (ECE or ECSE); or

    ii. The owner/operator employs or contracts with the services of an ECE or ECSE who holds a valid license in the required endorsement area for at least 10 hours per week for 35 weeks. The 10 hours that the licensed educator is present shall coincide with the hours of PreK education paid for by tuition from the district; or

    iii. The program receives regular, hands-on active training and supervision from a teacher who holds a valid license in the required endorsement area at least three hours per week, during each of the 35 weeks per year in which PreK education is paid for by tuition from districts; the operator shall maintain appropriate written documentation of the supervision on location.

Evaluation Methods

As described in 2016, the Agency of Education plans to conduct path analysis to determine the effect of PreK on student outcomes. Path analysis will help us to know if the PreK experience is leading to improved readiness for kindergarten in terms of social-emotional development, mathematics, and literacy skills. To further clarify, path analysis is a statistical method that can help estimate whether a particular intervention (e.g., a type of PreK program) has the assumed causal effect on an outcome (e.g., a student's Kindergarten Readiness assessment (R4K!S) or TSGOLD score). Eventually, we aim to understand if PreK participation leads to improved performance on third grade state-wide standardized test scores.

Path analysis will also help us evaluate the independent relationship of factors like student demographics, PreK program characteristics (e.g. accreditation and quality ratings), and program location on outcomes of interest. This kind of information will help us target program development and improvement in directions that show the greatest return on our state investment in early care and learning.

Data

The type of data needed to conduct a path analysis are collected and compiled within the AOE and the Bright Futures Information System at the AHS/DCF. To effectively evaluate the success of Act 166, the following data collections must be conducted in standardized ways:

1. Basic information regarding program structures (e.g., age spans, public/private, location, quality ratings, etc.)
2. Student information including enrollment and exit dates, attendance, standard demographic data, etc.
3. Student assessment data including:
    a. The TSGOLD assessment, which measures the progress of children's knowledge, skills and behaviors across multiple developmental domains (e.g., social/emotional, cognitive and physical)
    b. The R4K!S is an observation-based measure completed by kindergarten teachers within the first eight weeks of students entering kindergarten. This validated tool measures student readiness in social and emotional development, communication, physical health, cognitive development, knowledge, and approaches to learning. The data collected with this tool are appropriate for monitoring kindergarten readiness of the incoming cohorts over time in order to inform early childhood policies, such as the alignment across PreK and early elementary curricula as well as professional development needs. It provides data about the teachers' assessment of students' skills and knowledge as the students start kindergarten.
4. Financial information detailing the distribution of PreK dollars and the services purchased with those dollars.

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Section 1: Demographic Picture of Publicly Funded PreK Population 2017-18

The data below come from the Public Student Census and the Child Count (special education) collections.

Table 1: Enrollment in Publicly Funded PreK in 2014-15 (no Act 166), 2015-16 (Partial Implementation of Act 166), 2016-17 (Full Implementation of Act 166, and 2017-18 (Full Implementation of Act 166)

School Year	Enrollment
2014-2015 (Prior to Act 166)	6,281
2015-2016 (Partial Implementation of Act 166)	7,326
2016-17 Full Implementation (Full Implementation of Act 166)	8,950
2017-18 Full Implementation (Full Implementation of Act 166)	8,815
Change (2014-15 to 2017-18)	*+2,534*

Graphic 1: Enrollment in Publicly Funded PreK in 2014-15 (no Act 166), 2015-16 (Partial Implementation of Act 166), 2016-17 (Full Implementation of Act 166), and 2017-18 (Full Implementation of Act 166)
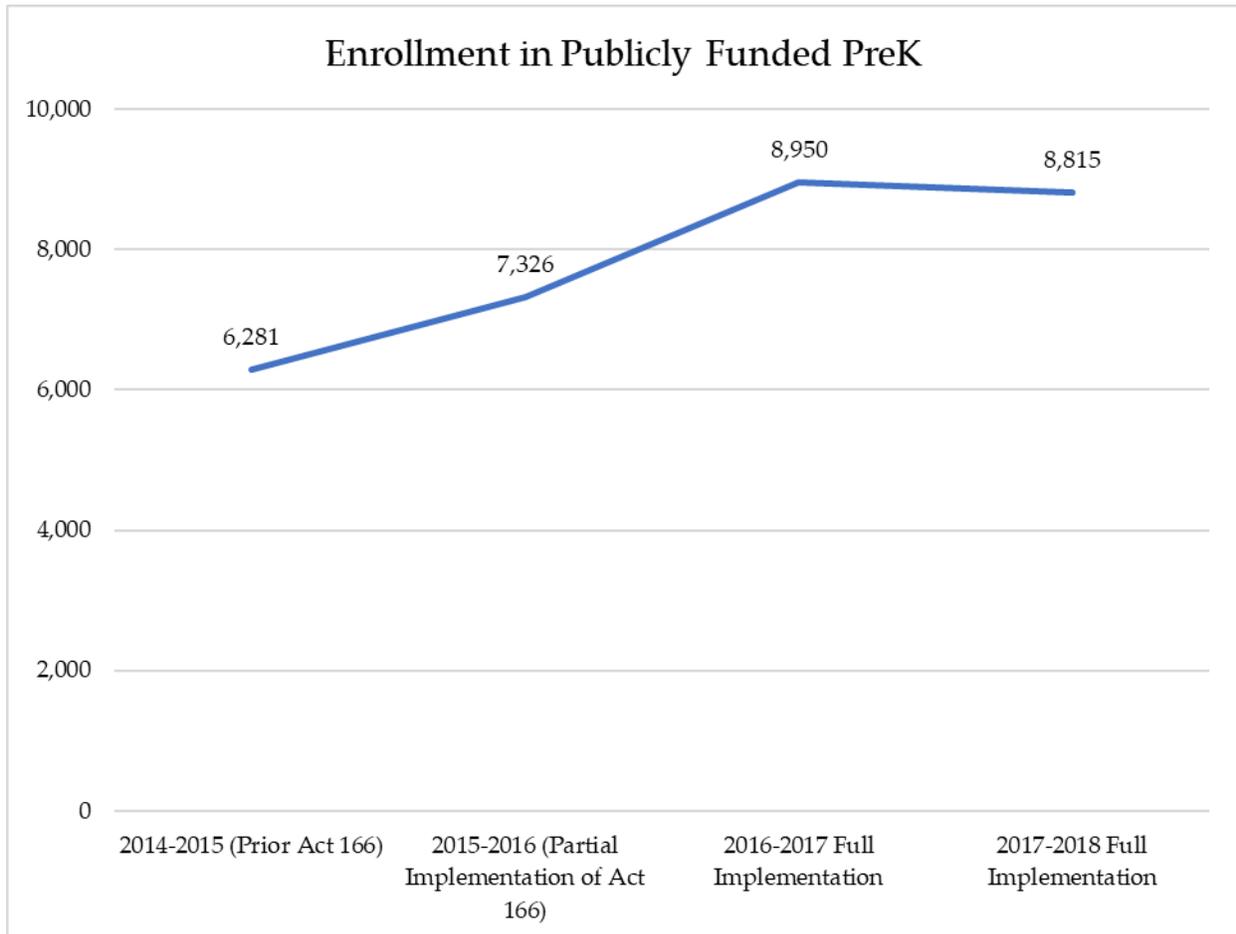
Table 2: Enrollment in Publicly Funded PreK by Supervisory Union/District Region 2015-16 (Partial Implementation), 2016-2017 (Full Implementation), and 2017-2018 (Full Implementation)

School Year	Number or Percent	Champlain Valley	Northeast	Southeast	Southwest	Winooski Valley	Total
2015-16	#	3,194	827	1,065	945	1,295	7,326
2015-16	%	44%	11%	15%	13%	18%	100%
2016-17	#	3,785	989	1,350	1,249	1,577	8,950
2016-17	%	42%	11%	15%	14%	18%	100%
2017-18	#	3,841	919	1,229	1,247	1,579	8,815
2017-18	%	44%	10%	14%	14%	18%	100%

- In 2017-18, 44% of all students enrolled in publicly funded PreK were enrolled in Supervisory Unions/Districts in the Champlain Valley.

Table 3: Demographic Characteristics of Enrolled Publicly Funded PreK Students

School Year	Number or Percent	Not Eligible FRL	FRL Eligible
2014-15	#	4,366	1,915
2014-15	%	70%	30%
2015-16	#	5,089	2,237
2015-16	%	69%	31%
2016-17	#	6,170	2,780
2016-17	%	69%	31%
2017-18	#	5,951	2,864
2017-18	%	68%	32%
School Year	**# or Percent**	**Not IEP**	**IEP**
2014-15	#	5,199	1,082
2014-15	%	83%	17%
2015-16	#	6,165	1,161
2015-16	%	84%	16%
2016-17	#	7,836	1,114
2016-17	%	88%	12%
2017-18	#	7,514	1,301
2017-18	%	85%	15%

School Year	# or Percent	Caucasian	Non-Caucasian
2014-15	**#**	5,756	525
2014-15	**%**	92%	8%
2015-16	**#**	6,767	559
2015-16	**%**	92%	8%
2016-17	**#**	8,213	737
2016-17	**%**	92%	8%
2017-18	**#**	7,973	842
2017-18	**%**	90%	10%

- The distribution of students enrolling in publicly funded PreK in terms of eligibility for Free and Reduced Lunch (FRL), special education (Individual Education Plan or IEP), and in terms of race/ethnicity in 2017-18 appears consistent with enrollment patterns in previous years.

Table 4: FRL Status for Pre-K and Kindergarten Students Comparison

School Year	# / %	PreK Not Eligible FRL	PreK FRL Eligible	Kindergarten Not Eligible FRL	Kindergarten FRL Eligible
2014-15	**#**	4,366	1,915	3,225	2,569
2014-15	**%**	70%	30%	56%	44%
2015-16	**#**	5,089	2,237	3,378	2,470
2015-16	**%**	69%	31%	58%	42%
2016-17	**#**	6,170	2,780	3,385	2,410
2016-17	**%**	69%	31%	58%	42%
2017-18	**#**	5,951	2,864	3,340	2,406
2017-18	**%**	68%	32%	58%	42%

- PreK enrollments continue to suggest that students eligible for FRL are under-enrolled in PreK compared to other grade levels. However, when those students enroll in Kindergarten the next year, FRL eligibility aligns to other grade levels. This suggests that FRL eligibility may not be accurately captured in the PreK enrollment process.

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Table 5: Number and Quality Rating of Prequalified PreK Comparison

School Year	Quality Levels	NAEYC Accredited or 5 STARS	4 STARS	3 STARS with Plan	Total
2015-16	**All Programs**	**186**	**123**	**33**	**342**
2015-16	Percent of All Programs	**54%**	**36%**	**10%**	**100%**
2015-16	Public Programs	81	47	12	140
2015-16	Private Programs	105	76	21	202
2016-17	**All Programs**	**201**	**152**	**30**	**383**
2016-17	Percent of All Programs	**52%**	**40%**	**8%**	**100%**
2016-17	Public Program	80	56	8	144
2016-17	Private Program	121	96	22	239
2017-18	**All Programs**	**204**	**161**	**42**	**407**
2017-18	Percent of All Programs	**50%**	**40%**	**10%**	**100%**
2017-18	Public Program	81	56	9	146
2017-18	Private Program	123	105	33	261

- During 2017-18, 90% of all prequalified PreK programs fully met Act 166 quality standards.[2]
  - The total number of participating PreK programs saw a net increase of 24 programs.
  - In 2017-18 there were:
    - 204 prequalified 5-star PreK programs, including 81 public and 123 private programs
    - 161 prequalified 4-star PreK programs, including 56 public and 105 private programs
    - 42 3-star PreK programs, including 9 public and 33 private programs

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[2] This percentage reflects all 4- and 5-star programs. 3-star programs do not fully meet Act 166 quality standards.

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Section 2: Financial Picture of PreK Expenditures 2016-17

This part of our analysis is based on data collected each year from Business Managers through the Statbook Collection. This collection provides data for annual federal and state required reporting. Details about this collection can be found here: http://education.vermont.gov/calendar/annual-statistical-report.

PreK enrollments are based on the census data collected and reported by Supervisory Unions and Supervisory Districts. These data only reflect the district of residence, not the location where PreK services are actually received by students. Per Act 166, a child registers for PreK to the school district of residence. For example, a child may live in Richmond, but may receive PreK services at a private provider located in Williston. The expenditures and student count for that student are recorded in the data for the Supervisory Union/District in Richmond.

Tuition payments are logged by Supervisory Unions/Districts as a "direct instruction" expenditure. The AOE does not collect data from private providers regarding how they use the funds once received so we cannot report on what portion of the tuition is used for "direct instruction" or administrative costs.

For this section, it is important to note that the expenditures for each PreK enrollment are linked to approximately $7,407 per child, which includes all special education services, tuition, transportation, administrative and support services, etc. Of this, a portion is spent on direct instruction (73%), including general and special education and contracts with other providers, student support services (11%), instructional support services (2%), administrative costs (5% total) and other costs such as transportation, equipment and supplies (10%). Direct services to children (general and specialized instruction, support and instructional support) comprise 86% of all expenditures in PreK. Note that these data do not account for state level transaction costs associated with implementation of Act 166, nor do they account for the variations between districts and SUs as to how costs are allocated.

Table 6: Statewide Expenditures for PreK from all State and Federal Funding Sources

School Year	Total Expenditure	Enrollment	Per Student Cost
2015-16	$54,629,330	7,326	$7,457
2016-17	$64,473,630	8,950	$7,204
2017-18	$65,289,078	8,815	$7,407
Change (2015-16 to 2017-18)	**+$10,659,748**	**+1,489**	**-$50**

Table 7: 2017-18 Statewide Expenditures for PreK by Category of Expenditure from All State and Federal Funding Sources

	2017-18 Expenditure	Per Student Cost (8,815 Enrollment)	Percent of Total
Total Expenditures	$65,289,077	$7,407	100%
Direct instruction	$47,672,362	$5,408	73%
Student support services	$7,147,880	$811	11%
Instructional support services	$1,232,777	$140	2%
School administration	$3,015,647	$342	5%
Central administration and services	$1,238,893	$141	2%
Other	$4,981,515	$565	8%

Notes:
1. Direct instruction - expenditures for instruction and personnel in both general and special education settings, such as classroom teachers, paraeducators, etc. This also includes tuition payments to private providers.
2. Student support services - expenditures for activities to assess and improve the well-being of students and supplement teaching. This includes some special education staff, guidance, health, nurses, etc.
3. Instructional support services - expenditures designed to assist instructional staff with content and learning experiences for students. This includes librarians, curriculum coordinators, instruction related technology, etc.
4. School administration - expenditures associated with administering the schools in a district. Includes principals, administrative assistants, department chairs, etc.
5. Central administration and services - expenditures associated with the supervisory union office and functions. This includes superintendents, special education coordinators, business managers, etc.
6. Other - includes transportation, building operation and maintenance, grounds and equipment maintenance, food services, debt, etc.

In looking specifically at direct instruction spending, we note that the tuition in 2017-18 was set at $3,178 but spending in each region is substantially more than this. This difference in value is attributed to additional special education costs which are provided by school systems above the Act 166 tuition paid to private providers for those students who require those services.

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Table 8: PreK Direct Instruction Expenditures and Enrollment by Region for 2015-16, 2016-17 and 2017-18

School Year	SU Regions	PreK Direct Instruction Expenditures	PreK Enrollment	PreK Direct Instruction Expenditures per Enrollment
2015-16	Champlain Valley	$15,840,127	3,194	$4,959
2015-16	Northeast	$5,375,989	827	$6,501
2015-16	Southeast	$5,799,596	1,065	$5,446
2015-16	Southwest	$4,744,439	945	$5,021
2015-16	Winooski Valley	$7,062,869	1,295	$5,454
2016-17	Champlain Valley	$22,565,989	3,785	$5,962
2016-17	Northeast	$6,227,020	989	$6,296
2016-17	Southeast	$6,476,099	1,350	$4,797
2016-17	Southwest	$5,876,449	1,249	$4,705
2016-17	Winooski Valley	$8,006,944	1,577	$5,077
2017-18	Champlain Valley	$27,598,271	3,841	$7,185
2017-18	Northeast	$8,770,932	919	$9,544
2017-18	Southeast	$9,095,243	1,229	$7,401
2017-18	Southwest	$8,107,079	1,247	$6,501
2017-18	Winooski Valley	$11,717,553	1,579	$7,421

Section 3: Educational and Child Outcomes

In this section we will discuss the preliminary findings related to the TSGOLD assessment outcomes for the 2017-18 schoolyear. These findings represent ongoing efforts to use administrative data in a statistical analysis capacity. Over the past three years, we have learned a considerable amount regarding the barriers to collecting high quality child-level data. Consequently, the 2017-18 school year saw an increase in the amount of technical assistance and guidance provided to the field to support data collection and management efforts.

Although we continue to caution readers to refrain from making policy-based decisions from these results, we want to highlight the substantial improvements that have been made in data completeness and quality over the past two years. We will continue to support teachers and program staff in the field to enable continued improvements in data quality over the coming years.

Measures:
In 2016, TSGOLD was selected to measure early Literacy and Numeracy performance for the

state.[3] The R4K!S was selected as the measure to assess students' readiness for school. For students enrolled in PreK in 2017-18, TSGOLD assessment scores are available but the R4K!S scores are not because Kindergarten data collection has just been completed for these children. For the 2016-17 cohort of PreK students, additional analyses are now underway to examine children's school readiness as measured by their Kindergarten teacher using the R4K!S.

Analysis Sample:
Our analysis sample includes 6,775 students who had full data on the TSGOLD in 2017-2018, which represents 77% of the 8,815 students enrolled in PreK for SY18[4]. This represents an increase from SY17, which had 68% of students with all required measures, and a vast improvement from SY16 when only 46% of students had all required measures.

These improvements can be attributed to the extensive training and outreach efforts the AOE conducted over the past year, as well as the substantial institutional resources the AOE dedicated to this effort utilizing resources from the federal Early Learning Challenge Grant which ended on December 31, 2018.

Notably, records were excluded if:
1. A student record in TSGOLD could not be matched to student records in the AOE Master Identity List.
2. A program's name as recorded in TSGOLD could not be matched to the AOE prequalification list of programs.
3. The student did not have both a fall and spring checkpoint for Math and Literacy, or checkpoints were incomplete.

Despite substantial improvements in data collection, management and reporting, program and policy decisions based on these preliminary findings are not recommended. The need remains for further support and guidance provided to the field. Further, the need remains to build appropriate technological infrastructure to improve data quality and data management, to enable our ability to leverage these data for analytic purposes.

Methods & Analysis:
The analysis sample used to determine how well students performed on TSGOLD does not include all students enrolled in public PreK. However, the students included in the sample are reasonably distributed across regions. Further, there were no statistically significant differences between the analysis sample and the total enrollment sample based on Free or Reduced Lunch (FRL) Status, Disability (IEP) Status, or race/ethnicity.

Importantly, the following tables can help us see *what* is happening at "face value". What follows cannot tell us *why* it may be happening or *how* it is related to enrollment in PreK. This

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[3] Please see Technical Notes for a detailed description of the TSGOLD measure.

[4] Please see Technical Notes for a detailed description of the processes followed in creating the sample.

kind of analysis will not in itself answer the question "does a relationship exist between high quality PreK instruction and improved student outcomes later in students' educational careers?" Additional analyses are planned for the available sample that will help begin to answer this important question; however, the data presented in the current report are not able to do so, and thus, have limited usefulness for informing the Legislature regarding the return on investment of PreK education dollars. It will, however, provide a look at the preliminary analysis group and their outcomes in a descriptive way.

Table 9: Overall PreK Enrollment by Region and TSGOLD Sample Group by Region and Demographic Characteristics 2017-18

	TSGOLD Analysis Sample	Percent of Analysis Sample	Total PreK Enrollment	Percent of Total PreK Enrollment
Total	**6,775**	**100%**	**8,815**	**100%**
Regions				
Champlain Valley	3,073	45%	3,841	44%
Northeast	679	10%	919	10%
Southeast	851	13%	1,229	14%
Southwest	993	15%	1,246	14%
Winooski Valley	1,179	17%	1,579	18%
Free Reduced Lunch (FRL)Status				
Not FRL Eligible	4,644	69%	5,951	68%
FRL Eligible	2,131	31%	2,864	32%
Disability (IEP) Status				
Not IEP	5,812	86%	7,514	85%
IEP	963	14%	1,301	15%
Race/Ethnicity				
Caucasian	6,123	90%	7,973	90%
Non Caucasian	652	10%	842	10%

Table 10: Literacy and Math Performance on TSGOLD in Spring 2018

Student Groups	Level	Literacy #	Literacy %	Math #	Math %
All Students	TSGOLD Analysis Sample	**6,775**	**100%**	**6,775**	**100%**
	Not Meeting Expectations	787	12%	937	14%
	Meets Expectations	4,468	66%	4,193	62%
	Exceeds Expectations	1,520	22%	1,645	24%
NOT FRL Eligible	TSGOLD Analysis Sample	**4,644**	**100%**	**4,644**	**100%**
	Not Meeting Expectations	436	9%	503	11%

Student Groups	Level	Literacy #	Literacy %	Math #	Math %
	Meets Expectations	3,009	65%	2,840	61%
	Exceeds Expectations	1,199	26%	1,300	28%
Total FRL Eligible	**TSGOLD Analysis Sample**	**2,131**	**100%**	**2,131**	**100%**
	Not Meeting Expectations	351	16%	433	20%
	Meets Expectations	1,459	68%	1,353	64%
	Exceeds Expectations	321	15%	345	16%
NOT IEP Eligible	**TSGOLD Analysis Sample**	**5,812**	**100%**	**5,812**	**100%**
	Not Meeting Expectations	476	8%	613	11%
	Meets Expectations	3,922	67%	3,674	63%
	Exceeds Expectations	1,414	24%	1,525	26%
IEP Eligible Students	**TSGOLD Analysis Sample**	**963**	**100%**	**963**	**100%**
	Not Meeting Expectations	311	32%	324	34%
	Meets Expectations	546	57%	519	54%
	Exceeds Expectations	106	11%	120	12%
Caucasian Students	**TSGOLD Analysis Sample**	**6,123**	**100%**	**6,123**	**100%**
	Not Meeting Expectations	701	11%	833	14%
	Meets Expectations	4,019	66%	3,786	62%
	Exceeds Expectations	1,403	23%	1,504	24%
Non-Caucasian Students	**TSGOLD Analysis Sample**	**652**	**100%**	**652**	**100%**
	Not Meeting Expectations	86	13%	104	16%
	Meets Expectations	449	69%	407	62%
	Exceeds Expectations	117	18%	141	22%

- Overall, a similar number of PreK students in the sample group met, or exceeded, expectations for literacy and math skills on the end of year assessment Teaching Strategies Gold (TSGOLD). Potential gaps in achievement of expectations were evident for several student groups.
    a. 88% of PreK students in the sample group either met or exceeded expected Literacy Achievement Levels in the spring TSGOLD assessment.
    b. 86% of PreK students in the sample group either met or exceeded expected Math Achievement Levels in the spring TSGOLD assessment. This is an increase of nearly 8% more children meeting the expected level than in 2016-17.
    c. TSGOLD achievements vary by free and reduced lunch eligibility, special education status and racial/ethnic background such that achievement gaps appear evident in the publicly funded PreK population.

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AGENCY OF EDUCATION

Table 11: Literacy and Math Performance by STARS Rating

STARS Rating	Performance Level	Literacy #	Literacy %	Math #	Math %
3 STARS Programs with Plans	TSGOLD Analysis Sample	**421**	**100%**	**421**	**100%**
	Not Meeting Expectations	37	9%	37	9%
	Meets Expectations	269	64%	253	60%
	Exceeds Expectations	115	27%	131	31%
4 STARS Programs	TSGOLD Analysis Sample	**2,467**	**100%**	**2,467**	**100%**
	Not Meeting Expectations	284	12%	329	13%
	Meets Expectations	1,624	66%	1,550	63%
	Exceeds Expectations	559	23%	588	24%
5 STARS Programs	TSGOLD Analysis Sample	**3,887**	**100%**	**3,887**	**100%**
	Not Meeting Expectations	466	12%	571	15%
	Meets Expectations	2,575	66%	2,390	61%
	Exceeds Expectations	846	22%	926	24%

- Performance on TSGOLD in both math and literacy is similar for programs that have 4 or 5-STARS, a rating based on Vermont's Step Ahead Recognition System or National Association Education of Young Children (NAEYC) accreditation. The Agencies are cautious about drawing conclusions based on these data at this time as the STARS program is undergoing revision.

Table 12: Literacy and Math Performance by Age in Spring 2018

Age as of 09/1/17	Performance Level	Literacy #	Literacy %	Math #	Math %
3 Years Old	TSGOLD Analysis Sample	**3,065**	**100%**	**3,065**	**100%**
	Not Meeting Expectations	457	15%	358	12%
	Meets Expectations	1,999	65%	2,049	67%
	Exceeds Expectations	609	20%	658	21%
4 Years Old	TSGOLD Analysis Sample	**3,602**	**100%**	**3,602**	**100%**
	Not Meeting Expectations	311	9%	557	15%
	Meets Expectations	2,416	67%	2,096	58%
	Exceeds Expectations	875	24%	949	26%
5 Years Old	TSGOLD Analysis Sample	**108**	**100%**	**108**	**100%**
	Not Meeting Expectations	19	18%	22	20%
	Meets Expectations	53	49%	48	44%
	Exceeds Expectations	36	33%	38	35%

- The performance of 3, 4 and 5-year-old children on the literacy and mathematics assessments vary by age, with progressively greater proportions of children exceeding their age-based expectations by age 5. On the literacy assessment, there is variation across ages among those children who do not meet expectations. On the mathematics assessment, there is a greater percentage of 5-year-old children who do not meet age-based expectations, as compared to 3 and 4-year old children.

Section 4: Strategies to Improve Quality and Reliability of Data and Reporting

Early efforts with these administrative data sets have highlighted the critical need to provide technical assistance and guidance to the field in order to facilitate the collection of high-quality data. They also highlight the need to adequately staff and technically support these data collections, the data infrastructure needed to house them sustainably, and the personnel to use them to inform programmatic work.

Thus, in 2017-18 we deployed a significant number of AOE resources to support universal PreK implementation across the state and to address identified data infrastructure needs. The following items are early lessons learned and steps the AOE and AHS are continuing to take to address the needs we have identified:

- Although missing data are always a challenge in conducting work of this kind, the finding that not all student data were being submitted as required reinforced the AOE's decision to provide additional training for the field in working with TSGOLD as statewide public PreK is implemented. Additional AOE resources were also redeployed to this work and federal grant-funded resources were procured to support these efforts. For the 2017-2018 school year, the AOE planned and delivered multiple TSGOLD introductory trainings as well as advanced trainings in multiple regions throughout the state. These face-to-face trainings were provided to school district personnel, childcare staff, and administrators. Introductory as well as advanced trainings were conducted in a small group setting (no more than 20 participants) with a certified TSGOLD instructor. Participants received notification of opportunity for TSGOLD training through the AOE's listservs, weekly field memo, and calendar of events. Detailed guidelines and requirements on the responsibilities of pre-qualified PreK programs who must use TSGOLD were sent via email and posted on the AOE website to encourage accuracy of the tool's use. Technical assistance was provided daily during phone calls and emails. Several webinars were held to introduce the new and expanded Birth-Grade 3 platform which began in August 2017.
- The AOE leveraged limited, timebound federal grant dollars to hire additional data staff members to support this work throughout the year. Full-time, permanent data and technical personnel are recommended for the work going forward if sustainability is to be achieved.
- In addition, the monitoring process for maintenance of prequalification status will be implemented next year. The monitoring process includes the AOE and CDD verifying

that prequalified programs submit all data and are in good standing as a private or public PreK program.

- Over the last six months, the AOE has worked to refine data collection mechanisms in TSGOLD to improve data quality, including submitting a Request for Information pursuing more capability to pre-load the organizational profiles of providers into the TSGOLD system. This work is ongoing and requires full-time, permanent personnel to support adequately. Vendor management is required to enable technical performance for data quality and integrity improvements. Such improvements ultimately reduce burden to the state and the field in use of the system and the data produced therefrom. For example, where previously the provider typed in the name of their program as text, if able to be implemented, the new collection would provide a drop-down menu of provider names drawn from the BFIS (Bright Futures Information System) data system. This small change should greatly reduce state staff overhead in performing the matching process.
- We have continued to better link the CDD BFIS database and the AOE TSGOLD database. This will ensure alignment of STARS ratings with program profiles and will include the creation and administration of a unique PreK program ID similar to the PSID/PAID/ISID system that AOE already employs for schools in the K-12 context. This work is ongoing and requires additional data and technical personnel to support adequately into the future.

Technical Notes

Analysis Sample Technical Notes

During the process of completing the three-step matching process to create the analysis data set from data housed at AOE (student-level data and program-level data) and at CDD (program-level data), we experienced considerable data loss, though less than when performing this work on the SY2017 data.

When we began this matching process, some students reported in the Public School Census did not have corresponding records in the TSGOLD collection. Additionally, even among the student records reported in the Public School Census that could be matched to a TSGOLD record, many TSGOLD records were not complete for both the fall and spring checkpoints. Similar to last year's analysis, records with incomplete data were dropped from this analysis. Only students with a full complement of domain scores from both fall and spring checkpoints were used in the parts of this analysis that required outcome scores.

Additionally, it continues to be a challenge during the second step of the matching process (when student-level data are connected with program-level data from the BFIS) that the TSGOLD program name is entered into a text field in the TSGOLD system. A text field is a data field where users can type in information, as opposed to a drop-down menu where they select a response. In our case, users enter the name of the program students are attending, which typically results in considerable inconsistency in naming conventions between the two data sources (TSGOLD and BFIS). Because of this inconsistency, we were unable to match records perfectly or even within a reasonable assumption in many cases. AOE is working with the TSGOLD vendor to determine if technical improvements can be made to remedy this shortcoming. Additional personnel resources would help to better manage this vendor relationship and the data assets that come from it. Specifically, additional data and IT personnel would be supportive of this work.

An example of the inconsistency in naming conventions described above would include a school record from the BFIS STARS system called, "Made-Up-PreSchool LLC" and a record from the TSGOLD system called "Made-Up-PreK Center". Although these two records represent the same school, the naming difference between the BFIS and TSGOLD records results in an inability to match the records at the AOE. Further, these two records might also each have a different town listed as their location in the BFIS STARS system and TSGOLD system and these two towns might be directly next to one another. Sometimes such discrepancies could be reconciled, other times they could not. We proceeded to match records when we had a reasonable level of certainty across these two data sources and those which could not be matched, were dropped from the analysis sample.

This lack of alignment between the two data collections is a result of different people engaging in different administrative data collections for different reasons with non-standardized naming

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conventions. For example, TSGOLD assessment administration is being used by classroom providers to assess students while an administrative person might be engaging with the BFIS STARS ratings system for administrative or monitoring purposes. The AOE Data Analysis & Management Division has documented areas where attention and consistency with respect to data management, alignment and data quality are needed. AOE is working on these areas with CDD and the administrators of the BFIS and TSGOLD systems. This effort has been a very important data quality and management improvement process and has provided concrete areas for targeting efforts going forward. Material and human resource support are required to do this work in a sustainable fashion.

The impact of the discrepancies between these two systems on data quality is highlighted in the excluded data:

1. At the program level, there were a total of 407 prequalified PreK program level records identified in the BFIS extract. We were able to match 323 PreK Program records from TSGOLD with a reasonable level of certainty to records with STARS ratings in the BFIS extract. Thus, we were able to retain data regarding 79% of the programs submitting assessment data.
2. At the student level, there were 8,815 students reported in the Public Student Census as enrolled in PreK in SY2018. Of these, 6,775 had complete records for both fall and spring TSGOLD checkpoint data and were attending programs that could be matched to BFIS STARS ratings. This means 77% of the SY2018 PreK population reported in the Public School Census could be used in this preliminary analysis.

TSGOLD
TSGOLD is a teacher administered assessment in early literacy and mathematics. Example items within the Literacy domain of the TSGOLD include demonstrating phonological awareness, demonstrating knowledge of the alphabet, demonstrating knowledge of print and its uses, comprehending and responding to books and other texts and demonstrating emergent writing skills. Example items within the Math domain of the TSGOLD include using number concepts and operations, exploring and describing spatial relationships and shapes, comparing and measuring and demonstrating knowledge of patterns.

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