Michigan's K-12 Virtual Learning Effectiveness Report 2015-16

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MICHIGAN VIRTUAL LEARNING®
RESEARCH INSTITUTE

About Michigan Virtual Learning Research Institute

In 2012, the Governor and Michigan Legislature passed legislation requiring *Michigan Virtual University*® (*MVU*®) to establish a center for online learning research and innovation, and through this center, directed MVU to work on a variety of projects. The center, known formally as *Michigan Virtual Learning Research Institute*™ (*MVLRI*™), is a natural extension of the work of *MVU*. Established in 1998, *MVU*'s mission is to advance K-12 education through digital learning, research, innovation, policy and partnerships. Toward that end, the core strategies of *MVLRI* are:

- Research – Expand the K-12 online and blended learning knowledge base through high-quality, high impact research;
- Policy – Inform local, state, and national public education policy strategies that reinforce and support online and blended learning opportunities for the K-12 community;
- Innovation – Experiment with new technologies and online learning models to foster expanded learning opportunities for K-12 students; and
- Networks – Develop human and web-based applications and infrastructures for sharing information and implementing K-12 online and blended learning best practices.

MVU dedicates a small number of staff members to *MVLRI* projects as well as augments its capacity through a Fellows program drawing from state and national experts in K-12 online learning from K-12 schooling, higher education, and private industry. These experts work alongside *MVU* staff to provide research, evaluation, and development expertise and support.

Disclaimer

This research result used data collected and maintained by the Michigan Department of Education (MDE) and/or Michigan's Center for Educational Performance and Information (CEPI). Results, information and opinions solely represent the analysis, information and opinions of the author(s) and are not endorsed by, nor reflect the views or positions of, grantors, MDE and CEPI or any employee thereof.

Disclosure

Please note that *MVU* is the parent organization of both the *Michigan Virtual School*® (*MVS*®) and *MVLRI*.

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Abstract

Based on pupil completion and performance data reported by schools to MDE or CEPI, this report highlights 2015-16 enrollment totals, completion rates, and the overall impact of virtual courses on K-12 pupils. Over 90,000 K-12 students took virtual courses in 2015-16, accounting for over 453,000 virtual course enrollments. Local Education Agency (LEA) schools provided 54% of all virtual enrollments with Public School Academy (PSA) schools adding another 44% of the virtual enrollments. Enrollments were heaviest in the high school grades. The pass rate for virtual courses was 58%; however, half of virtual learners passed every virtual course they took. One in four virtual learners, on the other hand, did not pass any of the virtual courses they took. Sixty-three percent of Michigan school districts reported having virtual enrollments. About 6% of all K-12 students in the state took a virtual course.

Executive Summary

Findings presented are based on data reported to the state by Michigan public schools, including those from LEAs, PSAs and Intermediate School Districts (ISD). This self-reported data is known to contain reporting errors, but represents the most comprehensive data collected on virtual learning in Michigan. Virtual enrollments were also categorized into three subsets: Cyber/Full-time Virtual, MVS, and Local (see page 15 for more detail). The report contains information on enrollments from Michigan K-12 learners who took at least one virtual course during the 2015-16 school year.

Key Findings for 2015-16

Schools

- 570 school districts reported at least one virtual enrollment.
- Over half of the 1,026 schools with virtual enrollments had 100 or more virtual enrollments.
- 73% of schools with virtual enrollments had a general education school emphasis; 25% had an alternative education emphasis.
- 88% of schools with virtual learning were LEA schools.
- LEAs accounted for 54% of the virtual enrollments; PSA schools generated 44% of the virtual enrollments.
- PSA cyber schools were responsible for a third of the virtual enrollments.
- 97% of virtual enrollments came from schools with 100 or more virtual enrollments.
- About 75% of virtual enrollments came from high schools.
- 28% of virtual enrollments came from suburban schools, the most of any locale.
- Schools with a general education emphasis had a 62% virtual pass rate, outperforming those with an alternative education emphasis which had a pass rate of 49%.
- 28% of schools had a school-wide virtual pass rate of 90% to 100%.

Courses

- 453,570 virtual enrollments were taken by Michigan K-12 students; the overall pass rate for virtual enrollments was 58%.
- Virtual enrollments were spread across 871 different course titles.
- 68% of virtual enrollments occurred in the core subject areas of English Language and Literature, Mathematics, Life and Physical Sciences, and Social Sciences and History.

- The course titles with the highest enrollments for each core subject were:
    - English Language and Literature: English 9, English 10, English 11, and English 12
    - Mathematics: Geometry, Algebra II, Algebra I, and Consumer Math
    - Life and Physical Sciences: Biology, Chemistry, Earth Science, and Physical Science
    - Social Sciences and History: U.S. History, World History, Economics, and World History and Geography
- The virtual pass rates for each core subject were:
    - English Language and Literature: 54%
    - Mathematics: 52%
    - Life and Physical Sciences: 57%
    - Social Sciences and History: 59%
- 29 different Advanced Placement (AP) courses were taken virtually.
- The percentage of enrollments was fairly consistent by subject area across rural, town, suburban, and city schools.
- Online courses (defined as including a teacher in the virtual environment) produced 79% of the virtual enrollments. Digital learning (without a teacher in the virtual environment) and blended learning (some virtual, some face-to face instruction) each accounted for about 10% of the virtual enrollments.

Students

- 90,878 K-12 students took at least one virtual course which represents 6% of Michigan public school students.
- 87% of virtual learners were in high school; 32% were seniors and 21% were juniors.
- 20% of virtual learners attended a PSA cyber school or an LEA full-time virtual school; the virtual pass rate for those students was 53%.
- Over half of virtual learners passed all their virtual courses. One quarter of virtual learners did not pass any of their virtual courses.
- Of the 22,357 students who did not pass any of their virtual courses, half took only one or two courses. Over 7,800 students took and did not pass five or more virtual courses with more than 2,300 students taking and not passing 11 or more virtual courses.
- Students enrolled in MVS courses were stronger students in general as measured by a higher pass rate in their non-virtual courses (93%) compared to students who were enrolled in their local school's virtual solution (75% pass rate). Moreover, students in MVS courses were also more successful in their virtual courses, even when considering their non-virtual performance.
- Female students had a higher pass rate (59%) than did males (56%).
- Students in poverty (54%) continue to make up a disproportionate number of virtual learners. Students in poverty also had a lower pass rate (53%) than did students who were not in poverty (65%).
- Pass rates were higher for students taking fewer virtual courses. Students taking one or two virtual courses had a 71% pass rate compared to 55% for those taking five or more.
- White students represented 66% of virtual students; African-Americans were 19%.

- About half of 11th grade virtual learners who took the SAT were proficient in the Reading/Writing component. About a quarter tested proficient in Science or in Math.

Introduction

The purpose of this report is to analyze the information on virtual learners that schools report to the state and to share the findings of that analysis with educational stakeholders in a highly consumable way that allows them to evaluate their virtual learning programs.

The report is organized into several sections. The first section looks at schools as the unit of analysis. The next section focuses on the virtual courses taken. The third section focuses on the student. There is also a brief section containing maps of virtual use. Each section is meant to capture the essential findings without being overly data intensive; however, data tables have been included in the appendices to provide those interested with more in-depth information.

An Important Change

Unlike in previous years for this report, data on most non-virtual learners was not available due to changes in reporting requirements for the Teacher-Student Data Link (TSDL) collection. Beginning with this reporting cycle, districts only needed to report TSDL data on students if they fit into one or more of five categories: Migrant education participants (Grades 9-12), Dual enrollment participants (Grades 9-12), Early Middle College participants (Grades 9-12), Advanced and accelerated learning (AP/IB) participants (All Grades), and Virtual/online learning participants. It may be this change in reporting requirements that helps explain how the consistent pattern of double-digit growth in virtual enrollment rates year after year suddenly became completely flat in 2015-16. For instance, there were 267 schools that reported virtual enrollments in 2014-15 that did not report any virtual enrollments in 2015-16. Even after discarding schools that reported less than 100 virtual enrollments for 2014-15, there were still 74 schools with a large number of enrollments in 2014-15 that reported no virtual enrollments in 2015-16. Those 74 schools had 59,545 virtual enrollments in 2014-15. It does not seem plausible to assume that every one of those 74 schools stopped offering virtual enrollments when they were such sizable programs; it seems more plausible to conclude that at least some of them had virtual enrollments that went unreported.

Unlike enrollment counts which have been skyrocketing over the last six years, virtual pass rates have been quite static, hovering in the high 50s or low 60s. There could be various ways to calculate a pass rate; but as used in this report, it is simply the percentage of enrollments with a completion status of "Completed/Passed." This formula remains consistent with past reports.

Finally, please note that in some tables and figures, the percentage data may not sum to 100% due to rounding.

Schools

For the 2015-16 school year, 570 districts reported having at least one virtual enrollment. This represents approximately 63% of Michigan public school districts.[1] Within those districts, 1,026 schools reported virtual enrollments.

By Grade Level

Across the 1,026 schools, 453,570 virtual enrollments were taken. Students in 12th grade enrolled in the most virtual courses (117,027) representing approximately 26% of all virtual enrollments. The overall pass rate for virtual enrollments was 58%, a 2% decline compared to the prior year. This ranged from a high of 70% in kindergarten to a low of 45% in 9th grade. See Table B1 for more information. In line with findings from previous years, virtual learners passed their virtual courses at a lower rate (58%) than they passed their non-virtual courses (78%). This gap of 20% is 7% larger than the 2014-15 school year. See Table B2.

By School-Level Virtual Pass Rate

Of the 1,026 schools with virtual enrollments, 288 or 28% had school-level virtual pass rates of 90% to 100%. Over half had virtual pass rates of 70% or better. The percentage of schools with an overall virtual pass rate of less than 10% dropped from 9% to 5%. See Table B3.

By Entity Type

LEA schools (54%) and PSA schools (44%) accounted for close to 90% of all the virtual enrollments. Almost 900 (88%) of school buildings with virtual enrollments came from LEA schools while only 91 (9%) of the schools were PSAs. See Table B4. LEA schools and PSA schools had approximately the same virtual pass rates (58% v. 57%). See Table B5. Thirty-three of the 44 full-time virtual buildings were LEA schools. They totaled 18,142 virtual enrollments with a 65% pass rate. In contrast, the 11 PSA cyber schools had 148,548 virtual enrollments with a pass rate of 51%. See Table B6. In total, 37% of virtual enrollments came from cyber or full-time virtual schools.

By School Emphasis

Schools designated with General Education as their emphasis produced 293,759 (65%) of the virtual enrollments. Schools with Alternative Education as their emphasis accounted for 151,280 (33%) of the virtual enrollments. See Table B7. There was a considerable difference in virtual pass rates between these two types of schools. General Education schools had a 62% virtual pass rate, whereas Alternative Education schools had a 49% virtual pass rate (see Table B8), though this, too, varied by entity type. LEA schools, for instance, had a 68% virtual pass rate for General Education schools and a 46% virtual pass rate for Alternative Education schools. See Table B9.

By Number of Virtual Enrollments

Just over half of schools with virtual enrollments – 52% – had 100 or more virtual enrollments. These schools were responsible for 97% of the virtual enrollments. As has been observed in

[1] See Number of Public School Districts in Michigan for count of Michigan public school districts available from http://www.michigan.gov/documents/numbsch_26940_7.pdf.

previous years, schools with less than 10 virtual enrollments were the next highest percentage of schools with 16%; however, they only generated .1% of the virtual enrollments. See Table B10.

Another trend that continued was that, in general, schools with fewer virtual enrollments per students performed better. Consider for instance, that 37% of schools with an average of 1 to 2 virtual enrollments per virtual learner had a virtual pass rate of 90% to 100% whereas only 20% of schools with an average of 3 to 4 virtual courses per learner had a 90% to 100% pass rate. See Table B11.

By Locale

Rural schools represented about 36% of schools with virtual enrollments. Enrollments from suburban schools yielded the second most with 27%. Suburban schools, however, tallied the largest percentage of the virtual enrollments at 28%. Schools that were missing a locale designation[2] (25%) and city schools (24%) were other locales with more than 100,000 virtual enrollments. See Table B12. In each of the four locales, schools with 100 or more virtual enrollments accounted for the largest percentage of schools. Similarly, schools with less than 25 virtual enrollments was the second most likely scenario. See Table B13. Virtual pass rates varied by locale with town schools having the highest virtual pass rate at 70% and city schools having the lowest at 50%. Both suburban schools (12%) and city schools (13%) had the highest percentage of schools with pass rates less than 20%. See Tables B14 and B15.

[2] Lack of locale codes for schools is due to changes in the National Center for Education Statistics' (NCES) process for determining locale codes. Locale code updates were not available until late 2016; therefore, those updates were not available at the time of development for this report.

Courses

The 453,570 virtual enrollments came from 871 different course titles.[3]

Courses by Subject Area

English Language and Literature was the subject area with the highest virtual enrollment with 91,390 enrollments – 20% of all virtual enrollments. Social Sciences and History, Mathematics, and Life and Physical Sciences were the other subject areas with 10% or more of the virtual enrollments. In high enrollment subject areas (greater than 10,000 virtual enrollments) Virtual pass rates varied from a low of 52% in Mathematics to a high of 72% for Computer and Information Sciences. See Table C1. The virtual pass rates were consistently lower than the non-virtual pass rate for the virtual learners in their non-virtual courses, a trend observed in past years. See Table C2.

Highest Virtual Enrollment Courses

For English Language and Literature, the most highly enrolled in virtual courses were 9th, 10th, 11th, and 12th grade English/Language Arts. Of those four, the pass rate was lowest for 9th grade English/Language Arts (42%) and consistently rose for each subsequent grade level to finish at 63% for 12th grade English/Language Arts. See Table C3.

In Mathematics, Geometry, Algebra II, and Algebra I were the virtual courses with the highest enrollments. The pass rate across the top ten most enrolled-in virtual mathematics courses was only 49%. This ranged from a low of 33% for Algebra 1 – Part 1 to a high of 65% for both Consumer Math and General Math. See Table C4.

Biology, Chemistry, and Earth Science were the three course titles responsible for more than 10% of the virtual enrollments in Life and Physical Sciences courses. A quarter of all Life and Physical Sciences virtual courses were taken in Biology. Of the top ten titles, Biology and Earth Science had the lowest pass rates at 49%; the highest was Science (grade 7) at 70%. See Table C5.

For Social Sciences and History, the three course titles of U.S. History – Comprehensive, World History – Overview, and Economics each yielded more than 10% of the virtual enrollments. Pass rates for the top ten most enrolled in courses ranged from a low of 34% in Early U.S. History to a high of 80% for Sociology. See Table C6.

Twenty-nine AP courses were taken virtually in 2015-16. AP Psychology was the most popular course accounting for 16% of the 2,352 AP enrollments. The pass rate for AP courses taken virtually was 85%. See Table C7. The pass rate for non-virtual AP courses taken by virtual learners was 93%.

Subject Area Enrollments by Locale

Course enrollment patterns were fairly consistent across locales. For instance, Mathematics represented between 16% and 18% of the virtual enrollments for all four (rural, town, suburb, and city) locales. The range was also 2% (13% to 15%) for Life and Physical Sciences. The biggest

[3] As determined by SCED Course Identifier Codes.

difference in percentage of enrollments was in English Language Arts where city schools had about 24% of their virtual enrollments. In contrast, it was just 18% for suburban schools and 16% for both rural and town schools. See Table C8. Pass rates in virtual courses also varied across subject areas and locale. For instance, in English Language and Literature, pass rates fell between 49% for city schools to 66% for town schools. In Mathematics, pass rates ranged from 49% (city) to 63% (town). See Table C9.

Subject Area Enrollments by Gender

Males and females enrolled in various subject areas in fairly similar proportions. For the four highest enrollment subject areas, the proportion of enrollment from males and females within those subject areas was within 1% of each other. Pass rates did, however, show more variability by gender. In English Language and Literature, females had a 3% higher pass rate than males, 2% higher for Mathematics, 3% higher for Life and Physical Sciences, and 4% higher for Social Sciences and History. See Table C10.

Courses by Virtual Method

Schools classified the virtual courses into one of three types: Blended Learning, Digital Learning, or Online Learning. According to page 487 of the *Michigan Student Data System Collection Details Manual Version 1.2*[4] for the 2015-16 school year, each type is defined as follows:

- Blended Learning - A hybrid instructional delivery model where pupils are provided content, instruction, and assessment at a supervised educational facility where the pupil and teacher are in the same physical location and in part through internet-connected learning environments with some degree of pupil control over time, location, and pace of instruction. For a course to be considered blended, at least 30% of the course content is delivered online.
- Digital Learning - A course of study that is capable of generating a credit or a grade that is provided in an interactive internet-connected learning environment that does not contain an instructor within the online environment itself. There may be a teacher of record assigned to the course, but this teacher does not provide instruction to students through the online environment. For a course to be considered online as opposed to blended, all (or almost all) the course content is delivered online.
- Online Course - A course of study that is capable of generating a credit or a grade that is provided in an interactive internet-connected learning environment, where pupils are separated from their teachers by time or location, or both. For a course to be considered online as opposed to blended, all (or almost all) the course content is delivered online.

Blended Learning enrollments accounted for 11% of the virtual enrollments and had a pass rate of 80%. Digital Learning totaled 10% of the enrollments with a 55% pass rate. Online courses represented the majority of the enrollments (79%) and yielded a pass rate of 55%. See Table C11.

[4] See the MSDS manual available from http://www.michigan.gov/documents/cepi/Collection_Details_SY1516_v1.0_486132_7.pdf#comp-stucourse

Students

For the 2015-16 school year, 90,878 Michigan K-12 students, approximately 6% of students in the state, took at least one virtual course. This was slightly lower than the number of virtual learners reported in the 2014-15 school year of 91,261. See Table D1.

By Grade Level

Only about 6% of the state's virtual learners were in grades K-5. Grades 6-8 were responsible for about 8% of the virtual learners. High school grade levels generated 87% of the virtual learners. Over 30% of virtual learners where high school seniors and more than 20% were juniors. See Table D1.

By Virtual Subset

Approximately 20% of virtual learners attended a PSA cyber school or an LEA full-time virtual school. Students in this subset represented 37% of all virtual enrollments and had a virtual pass rate of 53%. Students taking MVS courses reflected 10% of the virtual learning population. This group totaled 4% of the virtual enrollments and had an 81% pass rate. Students from the Local virtual subset accounted for 72% of virtual learners and tallied 59% of the virtual enrollments. The pass rate for the local virtual subset was 59%. See Table D2.

There were important differences observed in the non-virtual performance of MVS and Local students. MVS students passed their non-virtual courses 93% of the time, whereas students in the Local subset only passed their non-virtual courses 75% of the time. See Table D3.

By Gender

There were slightly more females (45,483) enrolled in virtual courses than males (45,403), though from a percentage perspective, each represented 50% of the population. Females had a 3% higher pass rate (59% compared to 56%), continuing the trend seen in past years of females outperforming their male counterparts on this measure. See Table D4.

By Race/Ethnicity

White students made up 66% of virtual students with African American students totaling the second highest percentage with 19%. Pass rates ranged between a low of 51% (African American) to a high of 69% (Asian). See Table D5.

By Poverty Status

Fifty-four percent of virtual learners were classified as living in poverty. This is about 8% higher than the K-12 statewide average of students eligible for free or reduced lunch in the fall of 2015[5]. Students living in poverty took 61% of the virtual enrollments for the year. This is 1% lower than the percentage of virtual enrollments from students in poverty in the 2014-15 school year. The pass

[5] See the Fall State Free and Reduced Lunch Count file for the 2015-16 school year available from https://www.mischooldata.org/Other/DataFiles/StudentCounts/HistoricalFreeAndReducedLunchCounts.aspx

rate for students in poverty (53%) was 12 percentage points lower than students who were not in poverty (65%). This gap was the same size observed in the previous year. See Table D6.

In addition to the performance gap between those in poverty and those not in poverty, there were also differences in non-virtual pass rates. Virtual learners in poverty had a 70% pass rate in their non-virtual courses, a 17% improvement over their virtual pass rate. Interestingly, students not in poverty had an 86% pass rate, a 21% improvement over their virtual pass rate. Thus, students in poverty actually had a smaller performance gap between their virtual and non-virtual pass rates than did students who were not in poverty. See Table D7.

By Seat Time Waiver Status

Students with a seat time waiver – a waiver that adjusts the requirement for the student to physically be in attendance at the school facility and lifts the cap on the number of virtual courses that can be taken away from the school – made up 17% of the virtual learners. A quarter of the virtual enrollments were taken by students on a seat time waiver. The pass rates between these two groups were relatively similar with a 56% pass rate for those on a waiver compared to 58% of those who were not on a waiver. See Table D8. This is in contrast to the 2014-15 data where the performance gap was 14% between the two groups.

By Non-Virtual Course Performance

Virtual learners with at least three non-virtual courses were classified into one of three categories based on their success in non-virtual courses. The three categories were:

- Passed all Non-Virtual Courses
- Did Not Pass 1 or 2 Non-Virtual Courses
- Did Not Pass 3 or More Non-Virtual Courses

In total, 65% of students had at least three or more non-virtual enrollments. Of that group, 47% of students passed all their non-virtual courses, 23% did not pass one or two, and 30% did not pass three or more. There were clear differences in virtual pass rates between the three categories. Students passing all of their non-virtual courses had an 84% virtual pass rate. Students who did not pass one or two non-virtual courses had a virtual pass rate of 60%, and those with the lowest non-virtual success had a virtual pass rate of only 37%. See Table D9.

There were also differences for these three groups by virtual subset. Students taking MVS courses consistently had higher virtual pass rates (89%, 76%, and 52%, respectively) compared to those using the Local virtual solution (83%, 59%, and 37%, respectively). See Table D10.

By Virtual Course Performance

One half of virtual learners passed every virtual enrollment they took. One quarter did not pass any of their virtual enrollments, and 26% passed some, but not all of their virtual courses. Students who passed all of their virtual courses were responsible for 35% of the virtual enrollments. Students with mixed success generated 45% of the enrollments, and students who did not pass any of their virtual courses contributed 21% of the virtual enrollments. See Table D11.

For the students who did not pass any of their virtual courses, 50% only took one or two virtual courses. On the other hand, 3,130 students (14% of virtual learners) did not pass 5 to 6 virtual courses, and a staggering 2,328 students did not pass 11 or more virtual courses. See Table D12. Almost 1,500 of those students (64%) had virtual enrollments with cyber or full-time virtual schools.

By Virtual Usage

Generally speaking, virtual learners did better when they took fewer virtual courses. Students taking one to two virtual courses had a pass rate of 71% compared to a pass rate of 59% for those taking three to four virtual courses and a pass rate of 55% for students taking five or more virtual courses. Almost half of students fell under the description of taking one or two virtual courses; however, 38% were found to have taken five or more virtual courses during the year. See Table D13.

By State Assessment

State assessment data can be used to provide an independent measure of student performance. Based on SAT and M-STEP data from students in 11th grade, virtual learners showed lower percentages reaching proficiency on the Evidence-Based Reading and Writing (SAT), Mathematics (SAT), Science (M-STEP) or Social Studies (M-STEP) examinations than the statewide proficiency rates. About half of the 11th grade virtual learners tested proficient in Evidence-Based Reading and Writing and about a quarter were proficient in Mathematics or Science. See Table D14.

As would be expected, the percentage of virtual learners testing proficient on these state tests varied considerably when taking into account their non-virtual performance. For instance, students taking a minimum of three non-virtual courses and passing all of them had proficiency rates that exceeded the statewide average for each of the four tests. Students who did not pass one or two of their non-virtual courses and those not passing three or more of their non-virtual courses had much lower rates of proficiency. See Table D15.

Students in poverty consistently recorded proficiency rates that were 20% to 30% lower than their peers who were not in poverty. See Table D16. A similar gap, though not as big, was found with students based on their seat time waiver status. Students with a seat time waiver were 10% to 16% less likely to reach proficiency on the test than those without a waiver. See Table D17.

Students taking virtual courses with MVS had the highest rates of proficiency on the four tests, exceeding the state average on all four examinations. Students from the local virtual subset had rates that were higher than those from Cyber/Full-Time virtual schools. See Table D18. When considering the non-virtual performance of students, the MVS students consistently outperformed the local virtual solution by double-digits. See Table D19.

Maps

Berrien, Eastern Upper Peninsula, Gogebic-Ontonagon, St. Joseph, Tuscola, and West Shore ISDs had more than 10% of their students take a virtual course in 2015-16. See Figure 1.

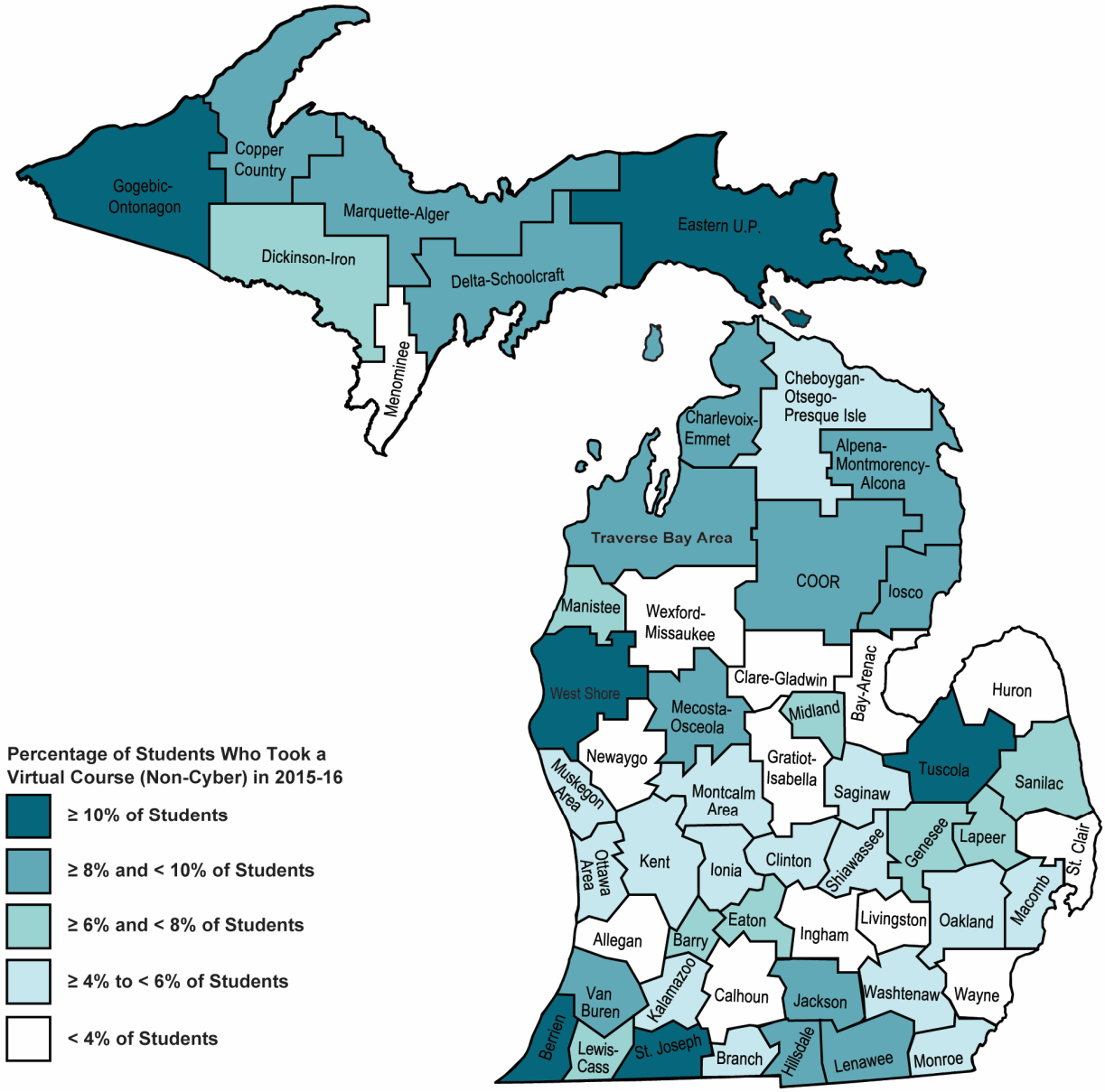

Figure 1. 2015-16 Percentage of Students Who Took a Virtual Course (Non-Cyber) by ISD

Students who were residents of Wayne, Oakland, Macomb, Genesee, Ingham, and Kent ISDs made up the highest percentage of cyber school students in the state for the 2015-16 school year. See Figure 2.

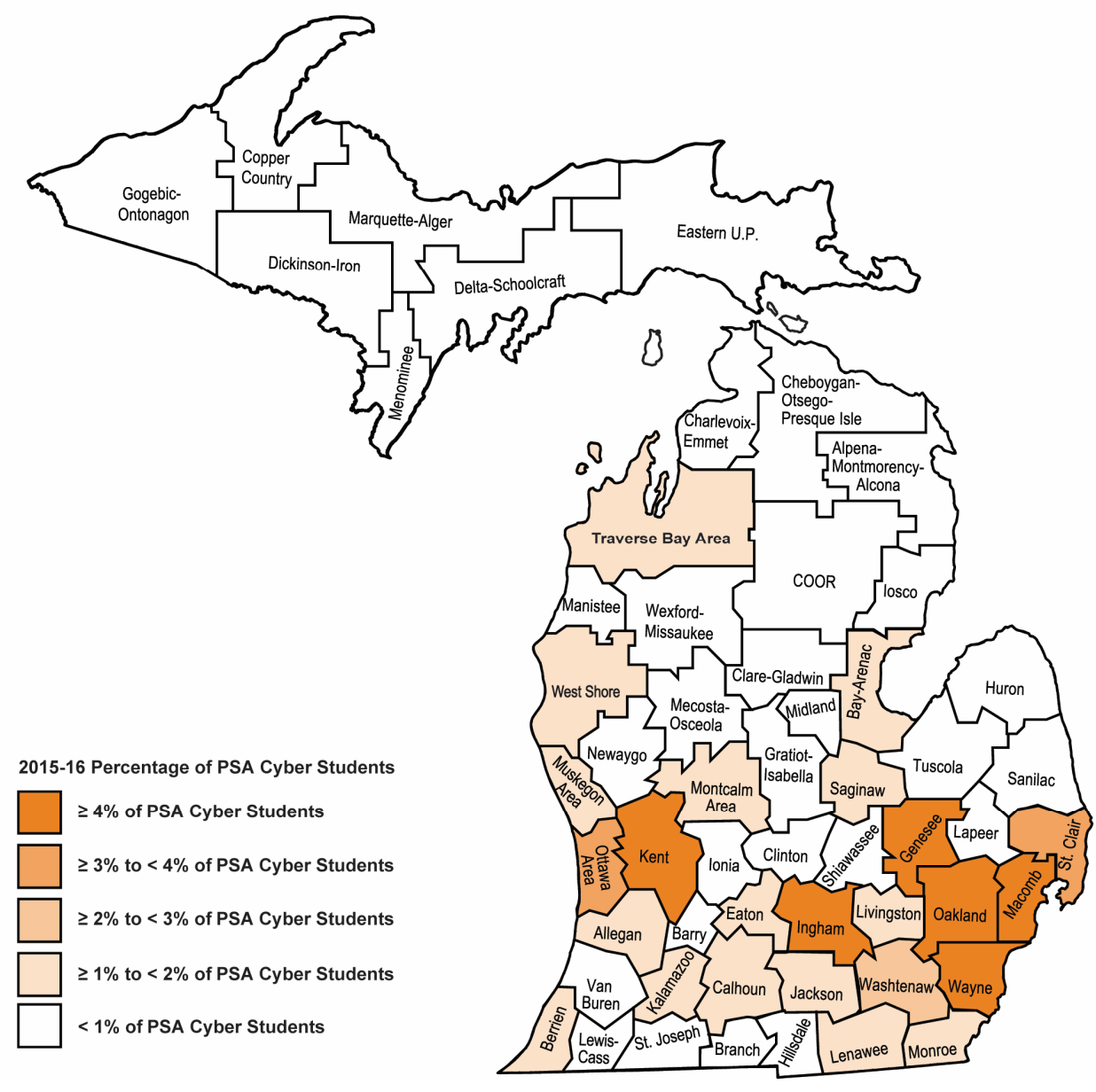

Figure 2. 2015-16 Percentage of Cyber School Students by Resident ISD

Conclusion

This year's report represents the sixth year of data on the effectiveness of virtual learning in Michigan's K-12 system. The change from requiring schools to report to the state for all learners to one where schools only had to report on special populations, including virtual learners, likely played a role in seeing a sudden flattening of growth on the number of virtual learners, virtual enrollments, and schools with virtual learning. See Table 1. Despite that, many trends witnessed in past years continue to exist. The data clearly indicate that students can and do succeed with virtual learning. Over half of virtual learners passed all of their virtual courses. Over a quarter of schools with virtual learning had school-wide pass rates of 90%-100%. Yet many kids, too many, had little to no success with virtual learning. A quarter of students did not pass any of their virtual courses; over 2,000 of those students took 11 or more virtual courses in the year, and in general the overall virtual pass rate for the year was 58%.

Table 1. Summary of Virtual Learning Metrics by School Year Since 2010-11

Virtual Learning Metric	10-11	11-12	12-13	13-14	14-15	15-16
# of Virtual Learners	36,348	52,219	55,271	76,122	91,261	90,878
# of Virtual Enrollments	89,921	153,583	185,053	319,630	445,932	453,570
Virtual Pass Rate	66%	62%	60%	57%	60%	58%
# of Schools	654	850	906	1,007	1,072	1,026

The data in this report represent an opportunity for schools and educational stakeholders to have critical conversations about what is working and for whom it is working, and what is not working and under what circumstances those results are occurring. The *Michigan Virtual Learning Research Institute* has created many resources that can assist schools in reflecting upon and improving their virtual programs. Some of these resources include:

- *Student Guide to Online Learning* – This guide is aimed at middle and high school students who are thinking about taking a virtual course. The guide shares advice and recommendations from virtual instructors, mentors, and virtual students. The guide is available at http://media.mivu.org/institute/pdf/studentguide.pdf.
- *Parent Guide to Online Learning* – This guide is written for parents/guardians of students thinking about taking a virtual course but is also relevant for other adults such as school counselors. The guide contains helpful information to assist with the decision making process. The guide is available at http://media.mivu.org/institute/pdf/parentguide.pdf.
- *Mentor Fundamentals* – All public school students taking virtual courses are expected to have a mentor assigned to them. The mentor is an employee of the school district the student attends and acts as a critical on-site support for the student. This guide helps mentors better understand the role of mentoring and includes recommended practices for supporting students. The guide is available at https://micourses.org/resources/pdf/toolkit/mentorguide.pdf.

Appendix A - Methodology

About the Data

The data for this report came from the following sources:

- Michigan Student Data System – School Year 2015-2016;
- Educational Entity Master (EEM);
- Michigan Student Data System Teacher Student Data Link (TSDL) – Collection Year 2015-2016;
- Michigan Virtual School Student Enrollment List – School Year 2015-2016 (Supplied by MVU); and
- Michigan's K-12 Virtual Learning Effectiveness Report, 2014-15 – Used for comparing this year's data with the 2014-15 school year. That report is available as a free download from http://media.mivu.org/institute/pdf/er_2015.pdf.

Virtual Learners were categorized into three subsets:

- Cyber/Full-time Virtual – enrollments from cyber schools or full-time virtual LEA schools. Cyber schools provide full-time instruction through online learning. Cyber schools were first created through Public Act 205 of 2009. Public Act 129 of 2012 expanded the number of cyber school contracts that could be issued in the state;
- MVS – virtual enrollments from students who were identified as taking at least one online course with Michigan Virtual School (MVS). MVS is a state-supported supplementary virtual school program that was created by Public Act 230 of 2000; and
- Local – virtual enrollments reported by non-cyber/full-time virtual schools for courses other than those delivered by MVS.

The majority of enrollments classified as virtual in this report were treated as such due to the TSDL virtual method field indicating virtual delivery. However, this field is known to contain inaccuracies. For the purposes of this report, additional methods were used to identify enrollments with a high likelihood of having been delivered virtually. Each of the methods used, along with the percentage of enrollments it contributed to the total, are outlined below.

- TSDL Virtual Method Flag = Yes. Enrollments where the TSDL virtual method field was set "Blended Learning," "Digital Learning," or "Online Course" were treated as virtual. According to the TSDL Data Collection Manual, the virtual method field "indicates the type of virtual instruction the student is receiving. This could be virtual learning, online learning or computer courses; distance learning; or self-scheduled virtual learning" (see page 487 of the TSDL manual available from http://www.michigan.gov/documents/cepi/Collection_Details_SY1516_v1.0_486132_7.pdf#comp-stucourse). This strategy yielded 99% (448,683) of the virtual enrollments.
- TSDL Local Course Title Field References MVS. The strategy of searching the local course title field for common references to MVS yielded less than 1% (438) of the virtual enrollments. See Appendix E for a list of search criteria.

- TSDL Local Course Title Field References Common Third Party Providers. Searching the local course title field for common references to known third-party providers of virtual courses yielded less than 1% (1,597) of the virtual enrollments. See Appendix E for a list of search criteria.
- TSDL Local Course Title Field References Common Generic Labels for Online or Virtual Learning. Searching the local course title field for common references to online, distance, or virtual learning yielded less than 1% (2,852) of the virtual enrollments. See Appendix E for a list of search criteria.

To determine student population, virtual subset, and type of course, the following process was used:

- If a student was flagged as having at least one virtual enrollment with MVS, all virtually delivered enrollments for that student were flagged as being provided by MVS. It is worth noting that not all of the virtual enrollments from these students were delivered by MVS, but there was no clear way to determine which of the virtual enrollments were not from MVS. Therefore, this report attributes all virtual enrollments from these students to MVS.
- All enrollments reported by schools labeled as "cyber schools" or full-time virtual that were not from students who had taken a virtual course with MVS were labeled under the Cyber/Full-Time Virtual Subset.
- All other enrollments that were delivered virtually were labeled under the Local Virtual Subset. A small number of students had virtual enrollments recorded under both the Cyber and Local Virtual Subsets.

Data Limitations

Because of the methodology described above, some enrollments are counted as virtual in this report that should not be – either because they were mistakenly marked as virtual by the school and/or because the local course title searches implemented by the research team yielded false positives. On the other hand, it is also safe to assume that some enrollments that should have been marked as virtual were not, both because they were not correctly flagged by the school and because the local course title did not give an indication of its virtual nature that aligned with the conventions used in the strategies outlined above. Consequently, the figures in this report should be treated as estimates that, generally speaking, convey the trends observed for the school year.

One final caveat for interpreting the results published in this report: There is clear variability in what schools report to the state as a "course." Some records align well with reporting conventions outlined by the U.S. Department of Education under their School Codes for the Exchange of Data (SCED)[6]. However, a review of the data suggests that many schools submit course records that may be better described as course units or lessons. Hence, while one district may report a single course for a child, for instance, Algebra I, another school might submit five such records, all with the same subject areas and course identifier codes, but with different local course IDs. Table 2 provides a

[6] See the U.S. Department of Education's School Codes for the Exchange of Data available from http://nces.ed.gov/pubs2007/2007341.pdf

glimpse into such reporting variability. Consider the Local virtual subset. For that group, 38% of the students had 11 to 15 courses (includes both virtual and non-virtual enrollments), but many students had more than that.

Table 2. Student Virtual and Non-Virtual Course Counts by Virtual Subset

Course Count by Student (Virtual and Non-Virtual)	Cyber/Full-Time	MVS	Local
1 to 5	6%	3%	7%
6 to 10	20%	23%	25%
11 to 15	57%	56%	38%
16 to 20	8%	14%	15%
21+	9%	3%	14%
Total	**100%**	**100%**	**100%**

Overall, however, such "over-reporting" seems to have more of an impact on enrollment counts than on the "Completed/Passed" rates reported. Negligible or no differences were seen in overall "Completed/Passed" rates for virtual learners in their virtual courses when students who had more than 20 virtual enrollments were removed from calculations.

Appendix – B School Tables

Table B1. 2015-16 Count and Pass Rate of K-12 Virtual Enrollments by Grade Level

Grade Level	# of Enrolls	% Change	Pass Rate	% Change from 14-15
K	6,321	-7%	70%	-1%
1	8,458	+6%	67%	-3%
2	9,900	+21%	58%	-11%
3	9,613	+18%	57%	-9%
4	10,934	+17%	68%	1%
5	10,846	+6%	65%	-5%
6	14,642	-1%	64%	-2%
7	19,443	-14%	65%	1%
8	23,785	-20%	63%	4%
9	67,103	-4%	45%	-5%
10	75,922	-6%	51%	-3%
11	79,576	+10%	58%	-1%
12	117,027	+11%	63%	-2%
Total	**453,570**	**+2%**	**58%**	**-2%**

Table B2. 2015-16 Pass Rate Comparison for Virtual Learners for Their Virtual and Non-Virtual Courses

Grade Level	Virtual Pass Rate	Non-Virtual Pass Rate
K	70%	72%
1	67%	79%
2	58%	72%
3	57%	78%
4	68%	74%
5	65%	79%
6	64%	86%
7	65%	82%
8	63%	78%
9	45%	67%
10	51%	73%
11	58%	81%
12	63%	82%
Total	**58%**	**78%**

Table B3. 2015-16 Number and Percentage of Schools by School Pass Rate

School Pass Rate	# of Schools	% of Schools
0% to <10%	54	5%
10% to <20%	20	2%
20% to <30%	42	4%
30% to <40%	59	6%
40% to <50%	69	7%
50% to <60%	94	9%
60% to <70%	111	11%
70% to <80%	136	13%
80% to <90%	153	15%
90% to 100%	288	28%
Total	**1,026**	**100%**

Table B4. 2015-16 Number of Schools and Virtual Enrollments by Entity Type

Entity Type	# of Schools	# of Virtual Enrolls	% of Virtual Enrolls
ISD School	26	7,614	2%
ISD Unique Education Provider	<10	<116	0%
LEA School	899	243,082	54%
LEA Unique Education Provider	<10	2,197	0%
PSA School	91	200,561	44%
State School	<10	<116	0%
Total	**1,026**	**453,570**	**100%**

Note: <10 and <116 are used as cell suppression techniques.

Table B5. 2015-16 Virtual Pass Rate by Entity Type

Entity Type	Pass Count	# of Virtual Enrolls	Pass Rate
ISD School	3,875	7,614	51%
ISD Unique Education Provider	<63	<116	54%
LEA School	140,529	243,082	58%
LEA Unique Education Provider	1,591	2,197	72%
PSA School	115,309	200,561	57%
State School	<63	<116	100%
Total	**261,367**	**453,570**	**58%**

Note: <63 and <116 are used as cell suppression techniques.

Table B6. 2015-16 Number of Full-Time Virtual or Cyber Schools with Pass Rates

Entity Type	# of Schools	Pass Count	# of Virtual Enrolls	Pass Rate
LEA School	33	11,799	18,142	65%
PSA School	11	75,701	148,548	51%
Total	**44**	**87,500**	**166,690**	**52%**

Note: Some of the PSA enrollments were in MVS courses.

Table B7. 2015-16 Number and Percentage of Schools and Virtual Enrollments by School Emphasis

School Emphasis	# of Schools	% of Schools	# of Virtual Enrolls	% of Virtual Enrolls
General Ed	750	73%	293,759	65%
Alternative Ed	253	25%	151,280	33%
Special Ed	<25	<2%	5,033	1%
Reportable Program	<25	<2%	3,498	1%
Total	**1,026**	**100%**	**453,570**	**100%**

Note: <2% is used as cell suppression technique.

Table B8. 2015-16 Virtual Pass Rate by School Emphasis

School Emphasis	Pass Count	# of Virtual Enrolls	Pass Rate
General Ed	182,600	293,759	62%
Alternative Ed	73,419	151,280	49%
Special Ed	2,112	5,033	42%
Reportable Program	3,236	3,498	93%
Total	**261,367**	**453,570**	**58%**

Table B9. 2015-16 Virtual Pass Rates for General Education and Alternative Education Schools by Entity Type

Entity Type	General Ed Pass Rate	Alternative Ed Pass Rate
ISD School	78%	29%
ISD Unique Education Provider	NA	54%
LEA School	68%	46%
LEA Unique Education Provider	100%	82%
PSA School	58%	57%
State School	NA	NA
Total	**62%**	**49%**

Table B10. 2015-16 Number and Percentage of Schools and Virtual Enrollments by Number of Virtual Enrollments per School

# of Virtual Enrolls Per School	# of Schools	% of Schools	# of Virtual Enrolls	% of Virtual Enrolls
1 to 9	163	16%	658	0.1%
10 to 19	83	8%	1,178	0.3%
20 to 29	53	5%	1,276	0.3%
30 to 39	34	3%	1,158	0.3%
40 to 49	29	3%	1,282	0.3%
50 to 59	30	3%	1,644	0.4%
60 to 69	26	3%	1,682	0.4%
70 to 79	25	2%	1,842	0.4%
80 to 89	25	2%	2,113	0.5%
90 to 99	24	2%	2,256	0.5%
100+	534	52%	438,481	96.7%
Total	**1,026**	**100%**	**453,570**	**100.0%**

Table B11. 2015-16 Percentage of Schools by Ratio of Virtual Courses to Student and School Pass Rate

School Pass Rate	1 to 2 Virtual Courses/Learner	3 to 4 Virtual Courses/Learner	4+ Virtual Courses/Learner
0% to <10%	5%	4%	7%
10% to <20%	1%	2%	3%
20% to <30%	2%	4%	8%
30% to <40%	3%	3%	14%
40% to <50%	3%	8%	11%
50% to <60%	9%	11%	8%
60% to <70%	10%	13%	9%
70% to <80%	13%	17%	9%
80% to <90%	17%	19%	7%
90% to 100%	37%	20%	23%
Total	**100%**	**100%**	**100%**

Table B12. 2015-16 Number and Percentage of Schools and Virtual Enrollments by Locale

Locale	# of Schools	% of Schools	# of Virtual Enrolls	% of Virtual Enrolls
Rural	369	36%	65,584	14%
Town	155	15%	38,709	9%
Sub	281	27%	126,654	28%
City	128	12%	109,008	24%
MISSING	93	9%	113,615	25%
Total	**1,026**	**100%**	**453,570**	**100%**

Table B13. 2015-16 Percentage of Schools with Virtual Enrollments by Virtual Enrollment Totals and Locale

Locale	1 to 24 Virtual Enrolls	25 to 49 Virtual Enrolls	50 to 74 Virtual Enrolls	75 to 99 Virtual Enrolls	100+ Virtual Enrolls	Total
Rural	27%	11%	11%	7%	44%	100%
Town	21%	8%	6%	6%	59%	100%
Sub	29%	7%	5%	6%	53%	100%
City	37%	7%	5%	2%	50%	100%

Table B14. 2015-16 Virtual Pass Rate by Locale

Locale	Pass Rate	% Change from 14-15
Rural	64%	+1%
Town	70%	+11%
Sub	61%	-2%
City	50%	-14%
MISSING	54%	+7%
Total	**58%**	**-2%**

Table B15. 2015-16 Percentage of Schools with Virtual Enrollments by Building Pass Rate and Locale

Locale	0% to <20% Pass Rate	20% to <40% Pass Rate	40% to <60% Pass Rate	60% to <80% Pass Rate	80% to 100% Pass Rate	Total
Rural	5%	9%	15%	29%	43%	100%
Town	2%	8%	19%	25%	46%	100%
Sub	12%	9%	16%	21%	43%	100%
City	13%	12%	13%	21%	41%	100%
MISSING	3%	16%	19%	19%	42%	100%

Appendix – C Course Tables

Table C1. 2015-16 Number and Percentage of Virtual Enrollments with Pass Rate by Subject Area

Subject Area	# of Enrolls	% of Enroll	Pass Rate
Agriculture, Food, and Natural Resources	442	0%	67%
Architecture and Construction	177	0%	81%
Business and Marketing	5,976	1%	69%
Communication and Audio/Visual Technology	1,343	0%	67%
Computer and Information Sciences	10,462	2%	72%
Engineering and Technology	4,627	1%	58%
English Language and Literature	91,390	20%	54%
Fine and Performing Arts	24,169	5%	62%
Foreign Language and Literature	26,333	6%	59%
Health Care Sciences	2,756	1%	78%
Hospitality and Tourism	321	0%	77%
Human Services	689	0%	80%
Life and Physical Sciences	63,788	14%	57%
Manufacturing	80	0%	88%
Mathematics	75,416	17%	52%
Military Science	28	0%	68%
Miscellaneous	32,780	7%	59%
Nonsubject Specific	1,314	0%	89%
Physical, Health, and Safety Education	32,476	7%	62%
Public, Protective, and Government Services	1,375	0%	70%
Religious Education and Theology	104	0%	83%
Social Sciences and History	77,465	17%	59%
Transportation, Distribution, and Logistics	59	0%	80%
Total	**453,570**	**100%**	**58%**

Table C2. 2015-16 Pass Rate Comparison for Virtual Learners for Their Virtual and Non-Virtual Courses by Subject Area

Subject Area	Virtual Pass Rate	Non-Virtual Pass Rate
Agriculture, Food, and Natural Resources	67%	87%
Architecture and Construction	81%	84%
Business and Marketing	69%	86%
Communication and Audio/Visual Technology	67%	81%
Computer and Information Sciences	72%	80%
Engineering and Technology	58%	87%
English Language and Literature	54%	77%
Fine and Performing Arts	62%	86%
Foreign Language and Literature	59%	76%
Health Care Sciences	78%	75%
Hospitality and Tourism	77%	72%
Human Services	80%	81%
Life and Physical Sciences	57%	76%
Manufacturing	88%	85%
Mathematics	52%	73%
Military Science	68%	81%
Miscellaneous	59%	79%
Nonsubject Specific	89%	81%
Physical, Health, and Safety Education	62%	83%
Public, Protective, and Government Services	70%	87%
Religious Education and Theology	83%	85%
Social Sciences and History	59%	77%
Transportation, Distribution, and Logistics	80%	83%
Total	**58%**	**78%**

Table C3. 2015-16 Number and Percentage of Virtual Enrollments with Pass Rate by Course Title for the Top 10 Most Enrolled in English Language and Literature Courses

English Language and Literature Course Titles	# of Enrolls	% of Enrolls	Pass Rate
English/Language Arts I (9th grade)	16,135	18%	42%
English/Language Arts II (10th grade)	12,321	13%	48%
English/Language Arts III (11th grade)	10,918	12%	58%
English/Language Arts IV (12th grade)	9,775	11%	63%
Language Arts (grade 7)	4,844	5%	57%
Language Arts (grade 5)	3,639	4%	62%
Language Arts (grade 8)	3,384	4%	54%
Language Arts (grade 4)	3,131	3%	67%
Language Arts (grade 6)	3,059	3%	55%
English Language and Literature—Other	2,487	3%	55%
Total	**69,693**	**76%**	**53%**

Note: % of Enrolls based on the overall total of 91,390 for this subject area.

Table C4. 2015-16 Number and Percentage of Virtual Enrollments with Pass Rate by Course Title for the Top 10 Most Enrolled in Mathematics Courses

Mathematics Course Titles	# of Enrolls	% of Enrolls	Pass Rate
Geometry	13,905	18%	48%
Algebra II	11,602	15%	53%
Algebra I	10,101	13%	40%
Consumer Math	5,037	7%	65%
Algebra I—Part 1	4,129	5%	33%
Pre-Algebra	3,294	4%	36%
Mathematics—Other	2,803	4%	55%
Algebra I—Part 2	2,523	3%	40%
Mathematics (grade 7)	2,486	3%	62%
General Math	2,207	3%	65%
Total	**58,087**	**77%**	**49%**

Note: % of Enrolls based on the overall total of 75,416 for this subject area.

Table C5. 2015-16 Number and Percentage of Virtual Enrollments with Pass Rate by Course Title for the Top 10 Most Enrolled in Life and Physical Sciences Courses

Life and Physical Sciences Course Titles	# of Enrolls	% of Enrolls	Pass Rate
Biology	15,717	25%	49%
Chemistry	11,214	18%	53%
Earth Science	6,857	11%	49%
Physical Science	4,187	7%	56%
Life and Physical Sciences—Other	2,531	4%	58%
Science (grade 8)	2,516	4%	64%
Environmental Science	2,122	3%	67%
Physics	2,058	3%	67%
Science (grade 7)	1,500	2%	70%
Science (grade 5)	1,119	2%	69%
Total	**49,821**	**78%**	**54%**

Note: % of Enrolls based on the overall total of 63,788 for this subject area.

Table C6. 2015-16 Number and Percentage of Virtual Enrollments with Pass Rate by Course Title for the Top 10 Most Enrolled in Social Sciences and History Courses

Social Sciences and History	# of Enrolls	% of Enrolls	Pass Rate
U.S. History—Comprehensive	10,522	14%	57%
World History—Overview	10,518	14%	51%
Economics	9,111	12%	60%
World History and Geography	6,812	9%	57%
U.S. Government—Comprehensive	5,162	7%	59%
Psychology	3,474	4%	71%
Civics	2,997	4%	60%
Sociology	1,966	3%	80%
Early U.S. History	1,899	2%	34%
U.S. History—Other	1,755	2%	48%
Total	**54,216**	**70%**	**57%**

Note: % of Enrolls based on the overall total of 77,465 for this subject area.

Table C7. 2015-16 Number and Percentage of Virtual Enrollments with Pass Rate by Course Title for AP Courses

AP Course Title	# of Enrolls	% of Enrolls	Pass Rate
AP Art—History of Art	51	2%	88%
AP Biology	105	4%	87%
AP Calculus AB	106	5%	79%
AP Calculus BC	93	4%	94%
AP Chemistry	73	3%	88%
AP Comparative Government and Politics	<10	0%	100%
AP Computer Science A	199	8%	90%
AP Computer Science AB	14	1%	93%
AP Economics	26	1%	38%
AP English Language and Composition	209	9%	86%
AP English Literature and Composition	194	8%	87%
AP Environmental Science	59	3%	90%
AP European History	<10	0%	67%
AP French Language	12	1%	100%
AP French Literature	<10	0%	100%
AP German Language	11	0%	27%
AP Government	13	1%	85%
AP Human Geography	14	1%	100%
AP Macroeconomics	95	4%	80%
AP Microeconomics	56	2%	89%
AP Physics B	100	4%	88%
AP Physics C	77	3%	91%
AP Psychology	370	16%	83%
AP Spanish Language	34	1%	56%
AP Spanish Literature	<10	0%	100%
AP Statistics	154	7%	88%
AP U.S. Government and Politics	59	3%	81%
AP U.S. History	90	4%	86%
AP World History	124	5%	89%
Total	**2,352**	**100%**	**85%**

Table C8. 2015-16 Virtual Enrollment Percentage by Subject Area and Locale

Subject Area	% Rural	% Town	% Suburb	% City	% Missing
Agriculture, Food, and Natural Resources	0%	0%	0%	0%	0%
Architecture and Construction	0%	0%	0%	0%	0%
Business and Marketing	2%	3%	1%	0%	1%
Communication and Audio/Visual Technology	0%	1%	0%	0%	0%
Computer and Information Sciences	2%	3%	3%	1%	2%
Engineering and Technology	0%	0%	0%	2%	1%
English Language and Literature	16%	16%	18%	24%	23%
Fine and Performing Arts	3%	3%	6%	7%	6%
Foreign Language and Literature	9%	8%	5%	4%	6%
Health Care Sciences	1%	1%	1%	0%	0%
Hospitality and Tourism	0%	0%	0%	0%	0%
Human Services	0%	1%	0%	0%	0%
Life and Physical Sciences	13%	13%	15%	14%	14%
Manufacturing	0%	0%	0%	0%	0%
Mathematics	16%	16%	18%	16%	17%
Military Science	0%	0%	0%	0%	0%
Miscellaneous	10%	14%	7%	6%	4%
Nonsubject Specific	0%	0%	0%	1%	0%
Physical, Health, and Safety Education	6%	5%	7%	9%	8%
Public, Protective, and Government Services	0%	1%	0%	0%	0%
Religious Education and Theology	0%	0%	0%	0%	0%
Social Sciences and History	20%	17%	17%	16%	17%
Transportation, Distribution, and Logistics	0%	0%	0%	0%	0%
Total	**100%**	**100%**	**100%**	**100%**	**100%**

Table C9. 2015-16 Virtual Enrollment Pass Rates by Subject Area and Locale

Subject Area	Rural Pass Rate	Town Pass Rate	Suburban Pass Rate	City Pass Rate	Missing Pass Rate
Agriculture, Food, and Natural Resources	84%	70%	56%	54%	57%
Architecture and Construction	64%	75%	89%	NR	91%
Business and Marketing	74%	83%	67%	51%	59%
Communication and Audio/Visual Technology	75%	82%	67%	37%	84%
Computer and Information Sciences	72%	80%	79%	61%	64%
Engineering and Technology	81%	90%	95%	41%	73%
English Language and Literature	57%	66%	58%	49%	50%
Fine and Performing Arts	66%	78%	70%	56%	57%
Foreign Language and Literature	71%	74%	58%	45%	52%
Health Care Sciences	86%	79%	88%	67%	45%
Hospitality and Tourism	77%	61%	77%	95%	74%
Human Services	83%	83%	66%	NR	87%
Life and Physical Sciences	61%	66%	59%	51%	54%
Manufacturing	NR	NR	80%	NR	NR
Mathematics	56%	63%	53%	49%	48%
Military Science	NR	NR	NR	NR	NR
Miscellaneous	65%	70%	63%	46%	52%
Nonsubject Specific	51%	91%	87%	99%	77%
Physical, Health, and Safety Education	69%	75%	67%	51%	62%
Public, Protective, and Government Services	78%	79%	71%	48%	63%
Religious Education and Theology	82%	84%	77%	NR	NR
Social Sciences and History	66%	70%	61%	50%	56%
Transportation, Distribution, and Logistics	NR	NR	81%	NR	NR
Total	**64%**	**70%**	**61%**	**50%**	**54%**

Note: Cells with "NR" were suppressed due to having less than 25 virtual enrollments.

Table C10. 2015-16 Number and Percentage of Virtual Enrollments with Pass Rates by Subject Area and Gender

Subject Area	# of Male Enrolls	# of Female Enrolls	% of Male Enrolls	% of Female Enrolls	Male Pass Rate	Female Pass Rate
Agriculture, Food, and Nat. Resources	158	284	0%	0%	56%	73%
Architecture and Construction	147	30	0%	0%	79%	90%
Business and Marketing	2,948	3,028	1%	1%	68%	70%
Communication and Audio/Visual Tech.	617	726	0%	0%	64%	70%
Computer and Information Sciences	5,779	4,683	3%	2%	70%	74%
Engineering and Technology	2,572	2,055	1%	1%	59%	57%
English Language and Literature	46,529	44,861	21%	20%	52%	55%
Fine and Performing Arts	11,623	12,546	5%	6%	60%	65%
Foreign Language and Literature	12,041	14,292	5%	6%	56%	62%
Health Care Sciences	901	1,855	0%	1%	72%	81%
Hospitality and Tourism	139	182	0%	0%	74%	80%
Human Services	156	533	0%	0%	78%	80%
Life and Physical Sciences	32,354	31,434	14%	14%	55%	58%
Manufacturing	59	21	0%	0%	92%	76%
Mathematics	38,366	37,050	17%	16%	51%	53%
Military Science	22	<21	0%	0%	73%	50%
Miscellaneous	15,991	16,789	7%	7%	57%	62%
Nonsubject Specific	711	603	0%	0%	89%	88%
Physical, Health, and Safety Education	15,943	16,533	7%	7%	60%	64%
Public, Protective, and Gov. Services	624	751	0%	0%	64%	74%
Religious Education and Theology	38	66	0%	0%	92%	77%
Social Sciences and History	37,941	39,524	17%	17%	57%	61%
Transportation, Distribution, & Logistics	44	<21	0%	0%	75%	93%
Total	**225,703**	**227,867**	**100%**	**100%**	**56%**	**59%**

Note: <21 is used as cell suppression technique.

Table C11. 2015-16 Number and Percentage of Virtual Enrollments with Pass Rate by Virtual Method

Virtual Method	# of Enrolls	% of Enrolls	Pass Rate
Blended Learning	49,424	11%	80%
Digital Learning	43,461	10%	55%
Online Course	356,535	79%	55%
Missing	4,150	1%	55%
Total	**453,570**	**100%**	**58%**

Appendix – D Student Tables

Table D1. 2015-16 Number of Virtual Students with Percent Year over Year Change

Grade Level	# of Students	% Change from 14-15
K	601	-18%
1	778	-11%
2	826	-12%
3	838	-22%
4	944	-8%
5	1,036	-16%
6	1,788	-33%
7	2,494	-18%
8	3,198	-33%
9	13,456	-1%
10	17,103	-4%
11	19,418	9%
12	29,168	11%
Total	**90,878**	**0%**

Note: Because some students took course across multiple grade levels for a single year, an individual student may be counted toward more than one grade level for a given school year. The total row, however, reflects the number of unique students for the year, and therefore may differ from the number one would get by summing the rows.

Table D2. 2015-16 Number and Percentage of Virtual Students and Enrollments with Pass Rate by Virtual Subset

Virtual Subset	# of Students	% of Students	# of Enrolls	% of Enrolls	Pass Rate
Cyber/Full-Time	17,896	20%	166,133	37%	53%
MVS	8,710	10%	19,098	4%	81%
Local	65,127	72%	268,339	59%	59%
Total	**90,878**	**100%**	**453,570**	**100%**	**58%**

Note: 855 students had enrollments across more than one virtual subset and therefore appear in more than one row. However, the total number of students (90,878) is the unique student count.

Table D3. 2015-16 Pass Rate Comparison for Virtual Learners for Their Virtual and Non-Virtual Courses by Virtual Subset

Virtual Subset	Virtual Pass Rate	Non-Virtual Pass Rate
Cyber/Full-Time	53%	NA
MVS	81%	93%
Local	59%	75%
Total	**58%**	**78%**

Table D4. 2015-16 Number and Percentage of Students and Virtual Enrollments with Pass Rate by Gender

Gender	# of Students	% of Students	# of Enrolls	% of Enrolls	Pass Rate
Males	45,403	50%	225,703	50%	56%
Females	45,483	50%	227,867	50%	59%
Total	**90,878**	**100%**	**453,570**	**100%**	**58%**

Note: Eight students had enrollments where their gender was listed as male on some, but female on others.

Table D5. 2015-16 Number and Percentage of Students and Virtual Enrollments with Pass Rate by Race/Ethnicity

Race/Ethnicity	# of Students	% of Students	# of Enrolls	% of Enrolls	Pass Rate
African American	17,661	19%	96,936	21%	51%
American Indian or Alaska Native	945	1%	4,196	1%	55%
Asian	1,566	2%	5,879	1%	69%
Hispanic or Latino	6,170	7%	33,357	7%	61%
Native Hawaiian or Pacific Islander	70	0%	257	0%	65%
Two or More Races	3,410	4%	20,717	5%	52%
Unknown	834	1%	3,309	1%	62%
White	60,222	66%	288,919	64%	60%
Total	**90,878**	**100%**	**453,570**	**100%**	**58%**

Table D6. 2015-16 Number and Percentage of Students and Virtual Enrollments with Pass Rate by Poverty Status

Poverty Status	# of Students	% of Students	# of Enrolls	% of Enrolls	Pass Rate
Yes	49,042	54%	275,753	61%	53%
No	41,002	45%	173,892	38%	65%
Unknown	1,050	1%	3,925	1%	59%
Total	**90,878**	**100%**	**453,570**	**100%**	**58%**

Note: The total number of students exceeds the 90,878 number because a few students had enrollments across multiple schools where one school listed the student under a specific poverty status, but the other school left the status unknown. The unique total was used to emphasize the true number of virtual students.

Table D7. 2015-16 Pass Rate Comparison for Virtual Learners for Their Virtual and Non-Virtual Courses by Poverty Status

Poverty Status	Virtual Pass Rate	Non-Virtual Pass Rate
Yes	53%	70%
No	65%	86%
Unknown	59%	45%
Total	**58%**	**78%**

Table D8. 2015-16 Number and Percentage of Students and Virtual Enrollments with Pass Rate by Seat Time Waiver Status

Seat Time Waiver Status	# of Students	% of Students	# of Enrolls	% of Enrolls	Pass Rate
Yes	15,497	17%	112,115	25%	56%
No	75,337	83%	337,530	74%	58%
Unknown	1,050	1%	3,925	1%	59%
Total	**90,878**	**100%**	**453,570**	**100%**	**58%**

Note: The total number of students exceeds the 90,878 number because some students had enrollments across multiple schools where one school listed the student under a specific seat time waiver status, but the other school left the status unknown. The unique total was used to emphasize the true number of virtual students.

Table D9. 2015-16 Number and Percentage of Students and Virtual Enrollments with Pass Rate by Non-Virtual Performance (Minimum of 3 Non-Virtual Enrollments)

Non-Virtual Performance	# of Students	% of Students	# of Virtual Enrolls	% of Enrolls	Pass Rate
Passed All NV Courses	27,619	47%	67,235	40%	84%
Did Not Pass 1 or 2 NV Courses	13,582	23%	41,039	25%	60%
Did Not Pass 3 or More NV Courses	17,640	30%	58,371	35%	37%
Total	**58,841**	**100%**	**166,645**	**100%**	**62%**

Table D10. 2015-16 Number of Virtual Enrollments with Pass Rate by Non-Virtual Performance (Minimum of 3 Non-Virtual Enrollments) and Virtual Subset

Non-Virtual Performance	# of MVS Enrolls	MVS Pass Rate	# of Local Enrolls	Local Pass Rate
Passed All NV Courses	11,875	89%	55,360	83%
Did Not Pass 1 or 2 NV Courses	3,189	76%	37,850	59%
Did Not Pass 3 or More NV Courses	2,199	52%	56,172	37%
Total	**17,263**	**82%**	**149,382**	**60%**

Table D11. 2015-16 Number and Percentage of Students and Virtual Enrollments by Virtual Course Performance

Virtual Course Performance	# of Students	% of Students	# of Enrolls	% of Enrolls
Passed All	45,289	50%	156,785	35%
Passed Some, But Not All	23,232	26%	202,392	45%
Didn't Pass Any	22,357	25%	94,393	21%
Total	**90,878**	**100%**	**453,570**	**100%**

Table D12. 2015-16 Number and Percentage of Virtual Students Who Did Not Pass Any Virtual Courses by the Number of Virtual Courses They Took

# of Virtual Courses Not Passed	# of Students	% of Students
1 to 2	11,156	50%
3 to 4	3,345	15%
5 to 6	3,130	14%
7 to 8	1,456	7%
9 to 10	942	4%
11+	2,328	10%
Total	**22,357**	**100%**

Table D13. 2015-16 Number and Percentage of Students and Virtual Enrollments with Pass Rate by Virtual Usage

Virtual Usage	# of Students	% of Students	# of Virtual Enrolls	% of Virtual Enrolls	Pass Rate
1 to 2 Virtual Courses	43,860	48%	61,209	13%	71%
3 to 4 Virtual Courses	12,704	14%	43,846	10%	59%
5 or More Virtual Courses	34,314	38%	348,515	77%	55%
Total	**90,878**	**100%**	**453,570**	**100%**	**58%**

Table D14. 2015-16 Comparison of Virtual and State Pass Rates on 11th Grade State Assessment Measures

Assessment Measure	Virtual Pass Rate	State Pass Rate
Evidence-Based Reading & Writing (SAT)	51%	60%
Mathematics (SAT)	26%	37%
Science (M-STEP)	27%	33%
Social Studies (M-STEP)	**35%**	**43%**

Note: Statewide data for SAT was available from the MI School Data Portal https://www.mischooldata.org/DistrictSchoolProfiles/AssessmentResults/CollegeReadiness/CollegeReadiness.aspx.

Both the science and social studies statewide data came from the MI School Data Portal https://www.mischooldata.org/DistrictSchoolProfiles/AssessmentResults/AssessmentHighSchoolPerformance.aspx.

Table D15. 2015-16 State Assessment Proficiency Rates for Virtual Learners with Three or More Non-Virtual Enrollments by Non-Virtual Performance

Assessment	Pass All NV Pass Rate	Did Not Pass 1 or 2 NV Pass Rate	Did Not Pass 3 or More NV Pass Rate
Evidence-Based Reading & Writing (SAT)	69%	46%	28%
Mathematics (SAT)	42%	21%	10%
Science (M-STEP)	39%	22%	12%
Social Studies (M-STEP)	49%	31%	19%

Table D16. 2015-16 State Assessment Proficiency Rates for Virtual Learners by Poverty Status

Assessment	Virt. Learners in Poverty	Virt. Learners Not in Poverty	All Virtual Learners
Evidence-Based Reading & Writing (SAT)	35%	65%	51%
Mathematics (SAT)	13%	38%	26%
Science (M-STEP)	15%	37%	27%
Social Studies (M-STEP)	22%	47%	35%

Table D17. 2015-16 State Assessment Proficiency Rates for Virtual Learners by Seat Time Waiver Status

Assessment	Virt. Learners With STW	Virt. Learners W/O STW	All Virtual Learners
Evidence-Based Reading & Writing (SAT)	38%	53%	51%
Mathematics (SAT)	12%	28%	26%
Science (M-STEP)	18%	28%	27%
Social Studies (M-STEP)	24%	37%	35%

Table D18. 2015-16 State Assessment Proficiency Rates for Virtual Learners by Virtual Subset

Assessment	Cyber/Full-Time	MVS	Local	All Virtual
Evidence-Based Reading & Writing (SAT)	44%	77%	47%	51%
Mathematics (SAT)	12%	51%	23%	26%
Science (M-STEP)	18%	47%	24%	27%
Social Studies (M-STEP)	28%	57%	32%	35%

Table D19. 2015-16 State Assessment Proficiency Rates for Virtual Learners by Virtual Subset and Non-Virtual Performance

Assessment	Pass All MVS	Pass All Local	Fail 1 or 2 MVS	Fail 1 or 2 Local	Fail 3+ MVS	Fail 3+ Local
EB Reading & Writing (SAT)	83%	64%	71%	42%	49%	27%
Mathematics (SAT)	58%	37%	41%	18%	25%	9%
Science (M-STEP)	53%	35%	40%	20%	22%	11%
Social Studies (M-STEP)	62%	45%	52%	28%	34%	18%

Appendix – E Wild Cards Search Criteria

Wild-Card Search Criteria for MVS

'%MI Virtual%', '%Mich Virt%', '%MIVHS%', '%MIVS%', '%MVS%', '%MVU%', '%VH', '%MVHS%', '%MIVU%', '%VHS%', 'MV%', '%MV', '%Michigan Virtual%', '%IS: MV%', '%IS:MV%', '%MI Virt%', '%MV HS%', 'Virtual HS%', and 'Mich. Virtual High School%'

Wild-Card Search Criteria for Common Third Party Providers

'%Apex%', 'APX%', '%Aventa%', '%BYU%', '%Brigham%', '%Compass%', '%Edgen%', '%2020%', '%20/20%', '%20-20%', '%E20%', '%Edison%', '%FLVS%', '%FVS%', '%GenNet%', '%Gen Net%', '%K12 Virtual%', '%K12:%', '%K12vs%', '%Lincoln Int%', '%Little Lincoln%', '%- Lincoln%', '%(Lincoln)%', '%Lincoln', '%UNL%', '%Middlebury%', '%Nova net%', '%Novanet%', '%Odyssey%','%Odware%', 'ODY%', '%(OD%', '%Edmentum%', and '%Plato%'

Wild-Card Search Criteria for Common Generic Labels for Online or Virtual Learning

'%Online%', '%On-line%', '%On line%', '%onl', '%onli', '%onlin', '%- OL', '%-OL', '%O/L%', 'OL %', '%STW%', '%E-Learn%', '%E-LRN%', '%Virtual%', '%- virt%', and '%- DL'

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