Blended Learning in Nine Catholic Schools in Los Angeles

An evaluation of tangible outcomes in student achievement, enrollment trends and school financial health

Conducted by Project Tomorrow

On behalf of Specialty Family Foundation

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SPECIALTY FAMILY FOUNDATION

"Innovating is a process, not an event."

Michael Horn and Heather Staker
Blended, Using Disruptive Innovation to Improve Schools

While digital tools have long held the promise of disrupting traditional education, for too long the emphasis has been on finding a "silver bullet" device or product that can instantly transform the learning process in the classroom. As emphasized by blended learning thought leaders, Michael Horn and Heather Staker, there is greater understanding today amongst educators, policymakers and funders that sustainable innovation in education is often the result of a sophisticated and complex process. This process is empowered by a carefully curated mix of visionary leadership, well-prepared teachers, a high achieving school culture and a committed parent community. Technology plays a significant role in this process also, but it is not the silver bullet. Digital tools and resources however are the new scaffolding for education innovations. Technology enables a school or a classroom to effectively and efficiently implement new and innovative classroom models and personalize learning for every student in awe-inspiring ways that were simply not possible before digital resources became pervasive within education.

Blended learning represents an example of a disruptive innovation that leans on technology to support effective usage, but where success is often actualized by that careful recipe of leadership, preparation, culture and commitment. A hallmark of blended learning is the focus on the personalized needs of students, positioning instruction to both augment students' unique strengths, capabilities and interests while at the same time effectively addressing areas that need targeted and individualized improvement or support. Appreciating the value of personalized learning, the Clayton Christensen Institute defines blended learning as follows:

Blended learning is a formal education program in which a student learns:

- *at least in part through online learning, with some element of student control over time, place, path, and/or pace;*
- *at least in part in a supervised brick-and-mortar location away from home;*
- *and the modalities along each student's learning path within a course or subject are connected to provide an integrated learning experience.*[i]

With this strong focus on the empowerment of individualized student achievement, blended learning has gained a dedicated following within schools in the United States over the past few years. Based upon the latest findings from Project Tomorrow's Speak Up Research Project, 51% of schools say they have implemented some form of blended learning to support student achievement. While school leaders extoll many virtues of blended learning including more personalization of the learning process, 42% of principals also express an ongoing frustration with a lack of clarity about how to meaningfully measure and evaluate the impact of this new learning modality on tangible student or school outcomes. Correspondingly, the inability to understand how to evaluate or measure success in a blended learning environment results in schools that are reluctant to experiment with the model or are confused when they do not see evidence of more traditional success metrics.

To help alleviate this frustration and confusion, Project Tomorrow has identified 10 critical success factors that are needed to ensure success with a blended learning implementation. This list is an outcome of our sustained work with the implementation of digital learning, and specifically, blended learning in K-12 schools.

What makes a blended learning implementation successful?

1. Supportive, visionary, involved leadership
2. Teacher confidence and comfort with tools and process
3. Continuity of staff as blended learning model matures and evolves
4. Appropriate digital tools and resources
5. Culture that values data and improvement
6. Classroom practices and habits that work
7. Student growth mindset: empowerment around learning
8. Parents that understand and value personalized learning
9. Maturity with model: move from measuring growth to evaluating proficiency
10. School leadership team is open to revisions, re-invention, re-imagining of initiative

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For many education leaders, this is a daunting list. Understanding that education leaders have much more to learn about effective blended learning implementations and especially about how to identify appropriate metrics for evaluating impact, this study sponsored by the Specialty Family Foundation and facilitated by Project Tomorrow aimed to evaluate the status and relative outcomes of blended learning within a special cohort of nine Catholic schools in Los Angeles. Using a data lens, the examination focused on the impact of blended learning on student achievement results, school enrollment and school financial health with a goal to reveal new insights as to the evolution and future direction of blended learning in helping Catholic schools achieve their student and community goals. The study sought specific evidence of effectiveness; effectiveness defined as consistency and constancy of growth and achievement schoolwide and at pivotal grade levels. To accomplish these goals, we conducted a secondary data analysis of student achievement data as well as longitudinal data about enrollment trends and school finances from the nine Los Angeles based Catholic schools who had all implemented blended learning schoolwide. Findings from the study underscore Horn and Staker's premise the innovative classroom practices and new learning models undertaken in schools cannot be viewed or evaluated as a one-time event but that the longer view of the process is essential when discussing results. Likewise, the Catholic schools that participated in this study fully appreciate that the implementation of blended learning is very much a journey, not just a destination.

Key findings from the study of blended learning in 9 Catholic schools in Los Angeles include:

- Maturity with a blended learning model matters. Schools with 3+ years of experience with blended learning had stronger performance in reading and math based upon the review of traditional achievement metrics that emphasis student growth.

- Blended learning provides evidence of student proficiency as well as growth. Thinking beyond growth to proficiency measures, tangible outcomes are evident from the blended learning implementations in the following areas: sustained increases in students' scaled scores in reading in grades 3 and 8, accomplishment of a minimum of one grade level growth in reading and math in grades 3 and 8, and eight of nine schools having their 8th graders graduate in spring 2017 with a reading level that is at or with 10% of being classified as college ready.

- Student enrollment growth depends upon many factors including how parents view the value of blended learning for their child. A key takeaway from this study is the need for school principals to re-evaluate how to effectively message blended learning to their community and not to assume that increased enrollment will be a given outcome.

- School financial health depends upon many factors. However, evidence from this study indicates that attaining a positive relationship between enrollment, operational efficiency and blended learning requires a mature implementation.

This report includes a detailed analysis of the study findings supporting these key findings as well as important insights from the analysis to support replication and scaling of these current efforts in Los Angeles. The appendix of the report includes information about the participating schools and the methodology employed in the study by Project Tomorrow.

Key Finding #1: Maturity with a blended learning model matters

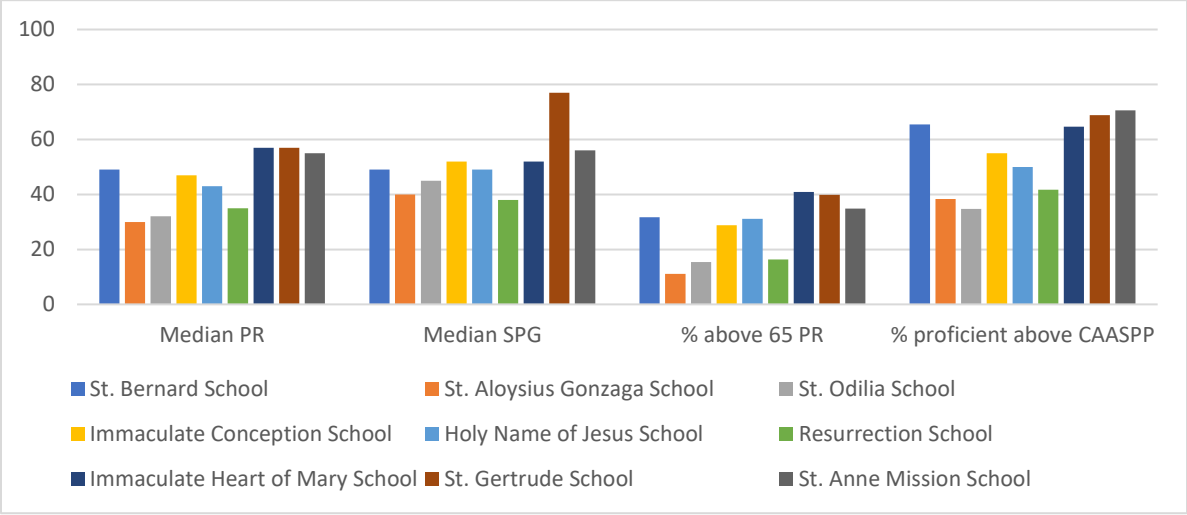
A key finding from this study is that four schools with mature blended learning implementations, defined as 3 or more years into the process of implementation, demonstrated higher student achievement levels in four key metrics than schools still in the early years of implementation. Those four schools are: St Anne Mission School, St Gertrude the Great School, St Bernard School and Immaculate Heart of Mary School. The student achievement data analyzed was from the Renaissance Learning's STAR assessments in reading and math, which are the standardized tests with the Archdiocese of Los Angeles.

The four metrics evaluated are the same metrics used by the Department of Catholic Schools within the Archdiocese on their Data Snapshot Report Overview. The **student growth percentile (SGP)** compares a student's growth to academic peers nationwide in the same grade and who began the year at a similar achievement level. In this study we examined the median SGP for the school in both reading and math. SGP is represented as a number from 0 to 100, with 50 symbolizing average growth. **Percentile rank (PR)** indicates the percentage of students in the same grade nationwide who scored lower at a similar time in the school year. In this study we examined the median PR for the school in both reading and math. PR is also reported on a 0 to 100 scale. To indicate being on track for state proficiency and college/career readiness, the third metric, the **ADLA benchmark**, reports on the percentage of students **at or above the percentile rank of 65**. For this study

we analyzed the schoolwide median for the percentage above 65. Finally, the fourth metric provides a way for the schools to see the relationship between STAR scores and California state test performance. Based upon an algorithm developed by Renaissance Learning using their STAR assessments and California assessment measures, a percentage of students with projected proficiency on the California exam is reported (percentage proficient above CAASPP).

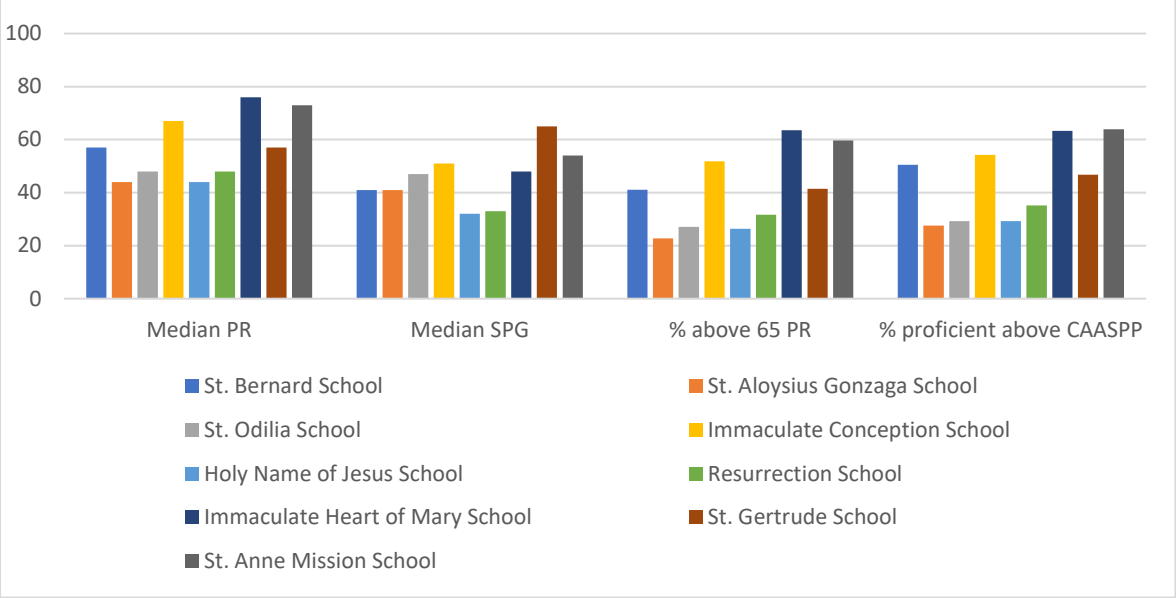
As indicated in Charts A and B, achievement results in reading and math from 2017 vary from school to school within our study cohort. However, in each category, median PR, median SPG, percentage at or above 65 PR and percentage proficient above CAASPP, four schools outflank their peer schools in reading: St Anne Mission School, St Bernard School, St Gertrude the Great School and Immaculate Heart of Mary School. As an example, the median SPG for St Gertrude School was 77, the median PR was 57, the percentage above the 65 PR level was 40% and the percentage of student projected to be proficient above the CAASPP was 69%.

Chart A: Student achievement in reading in 2017 – 4 metrics across all study schools



In terms of math achievement, we see a similar trend. These same four schools identified as having the highest achievement levels in reading are within the cohort of top 5 performing schools in math as illustrated in Chart B. It should be noted that Immaculate Conception School has stronger results in some of the key metrics. Immaculate Conception has a strong legacy of high performance in math. As we know that not all independent variables can be isolated, it may be that because of the school's institutional capacity for math instruction, their academic performance in this area is not necessarily influenced by blended learning at this time.

Chart B: Student achievement in math in 2017 – 4 metrics across all study schools



Three key insights emerge from this analysis of the schoolwide academic performance on the STAR assessments in reading and math, and the relationship to the maturity of the blended learning implementation.

1. The top 4 schools within the study group in reading and 4 of the top 5 schools in the study group in math are at the top of the class across all 4 metrics. Those common 4 schools – St Anne Mission, St Bernard, St Gertrude the Great, and Immaculate Heart of Mary – all have at least 3 years of blended learning implementation success under their belt. A significant conclusion from this analysis therefore is that the implementation of blended learning may closely follow patterns established by other digital learning initiatives or the introduction of innovative classroom practices. For any new initiative, it is expected that the adoption and adaptation process of assimilating new methodologies or practices into daily behaviors especially for teachers is at a minimum a 3 year process. Correspondingly, it is not realistic to expect to see sustained student achievement results that can be attributed to blended learning when teachers are still learning about the model or experimenting in their classroom with new practices.

2. Maturity involves more than establishing teacher comfort with blended learning. The blended learning culture is predicated on an appreciation for using formative student data to make improvements in teaching strategies and/or personalizing learning to meet student needs. Similarly, in all 4 schools which demonstrated strong academic results compared to peers, school leadership made changes and adjustments to their implementation of blended learning to address specific school needs. For example, whereas St Anne started their blended learning implementation with a four rotation model as recommended by their supporting partner, the school principal and teaching staff decided in year 2 of their implementation to standardize on a three rotation model. This was based upon a comprehensive

evaluation of the value associated with the project-based learning station and the effort expended by teachers to create meaningful learning experiences in that station. It was decided to make it flexible whereas the teachers could add in a fourth station as desired but that the emphasis would be on the three other stations (teacher led instruction, computer-based instruction, and independent learning time) to ensure that the student experiences at all 3 were productive. This focus on continuous improvement and refinement of the model is demonstrative of effective mature leadership and an established culture that supports innovation, even within an existing model of learning.

3. Challenges and obstacles still exist at all four of the higher performing schools as well as at the schools whose blended learning journey is still unfolding. For the four schools identified as having a mature model and correspondingly, higher academic performance on the traditional metrics, the confidence and comfort with blended learning results in greater adaptation and a stronger internal capacity for weathering unexpected changes. Such resiliency is represented by St Bernard School. Since developing and implementing a blended learning approach to instruction schoolwide in 2012, the school has experienced changes in both the school administration and within the teaching ranks. Despite that turnover, academic performance has remained at a high level. Leadership for blended learning at St Bernard is not situated only in the principal's office but rather is part of the school culture and thus the resiliency is baked into the DNA of instruction.

As stated earlier, successful outcomes with blended learning are rarely the result of the technology used. Rather, it depends upon a thoughtfully orchestrated mix of leadership, preparation, culture and commitment. This is most evident when examining the traditional metrics of student achievement results relative to the maturity of the blended learning implementations at our study schools. It takes time to nurture all the success factors for a high impact blended learning project that yields strong student outcomes.

Key Finding #2: Blended learning provides evidence of student proficiency as well as growth

Closing the achievement gap is the top challenge faced by the majority of school principals nationwide per recent Project Tomorrow research. The achievement gap challenge has heightened urgency for the principals of the nine Catholic schools in this study since their student population is comprised of a high number of students from disadvantaged families. As a result, many of their students are chronically below grade level in reading and math and thus, the effort to close the gap often means supporting "catch-up" growth that extends beyond the traditional one year per grade. In articulating the benefits of many kinds of academic interventions, including blended learning, the principals traditionally use the language of growth to demonstrate impact. The student growth percentile (SGP) is an example of a traditional metric that emphasizes student progress relative to a starting point or comparatively with other students who share a similar level. Increasingly, however, many of the Catholic school principals in this study want to see tangible evidence of student proficiency at grade level from the various interventions employed at their school. Whereas it is important to celebrate a 4th grade student whose reading level jumps two grade levels in one year, it is equally or maybe in some circumstances more

important to recognize that this same student is now reading at the 4th grade level. Conversely, while the two grade level reading level jump may be significant, it is unacceptable to be satisfied with this if that student is still reading at an early 3rd grade level.

To understand the dynamics of the blended learning implementations from both a growth and proficiency perspective, the study examined three additional metrics provided by the Renaissance Learning STAR assessments; scaled scores, grade level equivalency (GLE) and Lexile reading levels for reading, and grade level equivalency (GLE) for math. To evaluate these metrics, grade level medians were calculated from individual student data. Growth was evaluated from the beginning of the school year testing window scores (typically from August and September) compared to the results of the school year testing window (typically in May and June). Additionally, the midwinter 2018 medians were studied for evidence of positive trend lines in growth and proficiency from the prior years. Two grade levels were strategically selected for this deep analysis: Grade 3 and Grade 8. Grade 3 is a pivotal year in terms of reading proficiency, with resulting impact on math as well. In Grade 3 instruction shifts from learning to read to reading to learn. Demonstrated competency is imperative in Grade 3 to ensure that students are ready for the more advanced reading requirements of the upper grades including in science and social studies. Grade 8 was selected as it represents for the study schools a summative assessment on the quality of the education provided in this K-8 environment before the students advance to high school.

Reading achievement

For assessing reading achievement, three metrics were evaluated using individual student data: scaled score growth over the school year period, growth in grade level equivalency, and resulting student Lexile scores as a demonstration of proficiency.

Our analysis starts with an examination of the median scaled scores and scaled score growth for the 3rd graders at the study schools. With the STAR assessment, a scaled score of 344 for the fall testing and a spring score of 459 is considered to be at the 50 percentile. From 344 to 459 represents approximately 27% growth in the median scaled score over the school year. In our analysis, the 50 percentile score and the 27% growth served as our benchmarks to evaluate if the study schools overachieved or underachieved in the 2015/16 and 2016/17 school years. This analysis also served to demonstrate where schools were on track for achieving grade level competency in reading as measured by the scaled scores. Table 1 provides the median scaled scores per grade level, per school for the fall and spring testing across both the 2015/16 and 2016/17 school years as well as the calculated growth percentage in the scaled score medians.

Table 1: Grade 3 Reading – Comparative Median Scaled Scores and Annual Growth

School	Gr 3 2015 - fall	Gr 3 2016 - spring	% growth	Gr 3 2016 - fall	Gr 3 2017 - spring	% growth
St. Anne	352	492	**40%**	340	483	**42%**
St. Gertrude	286	506	**77%**	353	472	**34%**
Resurrection	291	445	**53%**	336	410	**22%**
Holy Name of Jesus	237	365	**54%**	285	444	**56%**
Immaculate Conception	280	424	**51%**	343	516	**50%**
St. Aloysius	273	373	**37%**	273	373	**37%**
St. Odilia	275	376	**37%**	237	365	**54%**
St. Bernard	428	522	**22%**	378	469	**24%**
Immaculate Heart of Mary	346	512	**48%**	368	474	**29%**

Several significant findings emerge from this analysis of the Grade 3 scaled scores across the schools.

1. All nine schools saw positive scaled score growth in both school years, comparing fall results to spring results.
2. Four schools in spring 2016 and five schools in spring 2017 had a median scaled score in reading for their 3rd graders that was above the 50th percentile goal of 459, indicating both a higher level of competency as well growth in one school year.
3. While two years of data is insufficient for trend analysis, it is impressive that the schools within the Loyola Marymount University cohort (Holy Name of Jesus, Immaculate Conception and St Aloysius Gonzaga Schools) had a stable level of one-year growth for both school years within their 3rd grade, a potential sign of sustainability as an impact of the blended learning initiatives in those schools.
4. The four schools with the highest median scaled scores in spring 2016 and four of the five schools with the highest median scaled scores in spring 2017 are schools with 3 or more years of blended learning experience within their school: St Anne Mission, St Bernard, St Gertrude the Great, and Immaculate Heart of Mary. Additionally, as we noted in the traditional metrics section, Immaculate Conception School's performance in the 2016/17 school year (their first year with blended learning) was especially noteworthy as well and may indicate an especially early successful adoption of the blended learning model.

The higher achievement within the schools with the most blended learning maturity follows to some extent when examining the median scaled scores from the Grade 8 students. For Grade 8 reading, the 50th percentile markers are a median scaled score of 876 in the fall and 959 in spring, resulting in a flatter growth of approximately 9% over the school year. Table 2 provides the summary data by school for their 8th graders. It

should be noted that the 8th grade class at St. Aloysius Gonzaga School for the 2015/16 schoolyear was very small and thus, the data findings are insignificant within this analysis.

Table 2: Grade 8 Reading – Comparative Median Scaled Scores and Annual Growth

School	Gr 8 2015 - fall	Gr 8 2016 - spring	% growth	Gr 8 2016 - fall	Gr 8 2017 - spring	% growth
St. Anne	919	1012	**10%**	973	986	**1%**
St. Gertrude	660	777	**18%**	905	1318	**46%**
Resurrection	688	818	**19%**	878	956	**9%**
Holy Name of Jesus	742	777	**5%**	757	873	**15%**
Immaculate Conception	740	916	**24%**	828	921	**11%**
St. Aloysius	765*	680*	**-11%**	703	830	**18%**
St. Odilia	623	692	**11%**	742	777	**5%**
St. Bernard	880	1074	**22%**	886	917	**3%**
Immaculate Heart of Mary	887	1134	**28%**	841	923	**10%**

The key insights from this data analysis include:

1. Seven of the schools had a higher growth percentage in spring 2016 than the 50th percentile marker of 9%. Using the spring 2017 results, six schools were above that milestone.
2. This Grade 8 analysis points to the importance of looking beyond just growth measures as it often not aligned with competency or proficiency. It is also important to note that when a school is high performing in reading such as St Anne Mission School it is increasingly difficult to achieve high levels of growth in one year.

To look beyond growth statistics, the study examined reading proficiency through a different lens, the Lexile® measure. The Lexile measure is an established metric used by teachers to both provide their student with appropriately leveled reading materials as well as understanding a student's individualized reading level. The Lexile scale is therefore a common scale for both text measure (readability or text difficulty) and reader measure (reading achievement scores). The Lexile scale measures a student's reading ability level on a continuous scale ranging from below 0 (BR400L) to 1825L or more. The Lexile Framework was developed by MetaMetrics©, an educational assessment and research team, funded originally by the National Institute of Child Health and Human Development. The STAR assessment in reading provides an individualized Lexile measure for each student. In this analysis, the median Lexile measure for students in grades 3 and 8 at the study schools were calculated from the individual student scores.

The findings from the analysis of the median school Lexile scores for grade 8 students were particularly informative. In many ways, 8th grade spring assessments are not only a summative indicator on the school year proficiency, but also on the success of the school in preparing their graduate for the rigor of high school. Given the importance of reading proficiency for high school success, evaluating the reading levels of the graduating 8th graders can be an important indicator of the preparation success of the school overall.

The Lexile range for 8th grade is a measure of 1050 to 1100. The 1050 measure typically represents the beginning of 8th grade and the 1100 indicates a reading level of the beginning of 9th grade. Students reading at a Lexile score of 1200 or above are considered to be college ready from a reading proficiency standpoint. As indicated in Table 3, graduating 8th graders from 7 of the 9 schools in the study are reading at the 9th grade level or above as of their spring 2017 assessments. Three of the 8th grade classes also qualify as college ready with median scores above 1200 (St Anne Mission, St Gertrude the Great and Resurrection Schools). Four additional schools (Immaculate Conception, St Bernard, St Aloysius and Immaculate Heart of Mary) also have graduating classes with a median Lexile level within 10% of that college ready recognition. Equally impressive is the growth in the median Lexile level from fall 2016 to spring 2017.

Table 3: Grade 8 Reading – Comparative Lexile Levels – 2016/17 School Year

School	Gr 8 2016 - fall	Gr 8 2017 - spring
St. Anne	1245	1260
St. Gertrude	1165	1568
Resurrection	1138	1228
Holy Name of Jesus	1015	1125
Immaculate Conception	1080	1185
St. Aloysius	965	1080
St. Odilia	1005	1030
St. Bernard	1138	1183
Immaculate Heart of Mary	1095	1185

Lexile range for grade 8:

1050 – beginning of 8th grade

1100 – beginning of 9th grade

+ 1200 – college ready reading

Relative to the impact of blended learning on reading proficiency, two key insights are noteworthy:

1. The three schools with the highest median Lexile level for their 8th grade class are schools who have utilized the Seton model for blended learning (St Anne Mission, St Gertrude the Great and Resurrection School). Each of these schools also had median 8th grade scores at the college ready level.

2. The next tier of high median Lexile levels includes the schools with mature blended learning implementations (St Bernard and Immaculate Heart of Mary) and Immaculate Conception which has demonstrated through this analysis strong performance even as a blended learning novice.

The final analytics around reading achievement focus on the relationship between growth and proficiency by examining the grade level equivalency (GLE), another metric derived from the STAR data. This analysis focused on the changes in grade level equivalency from fall to spring in 3rd grade (growth) and the resulting grade level indication from the spring assessments (proficiency). Grade level equivalency is calculated using a 10-month scale with an assumption that students start school scoring at the equivalency of their grade level in the fall and then progress to be ready for the following grade level by spring, as represented by a growth of one grade level in one school year. For example, students entering grade 3 should perform at the 3.0 GLE in their fall STAR testing period. For the summative testing in the spring, educators want to see a full year or 10 months' worth of growth to a 4.0 GLE score for those third graders. Using GLE therefore we can contextualize approximate reading proficiency as it relates to grade level in terms of are students reading at their grade level. Table 4 illustrates the fall and spring median GLE for 3rd graders in reading and the grade level growth for each school during the 2015/16 and 2016/17 school years.

Table 4: Grade 3 Reading – Comparative Median Grade Level Equivalency and Annual Growth

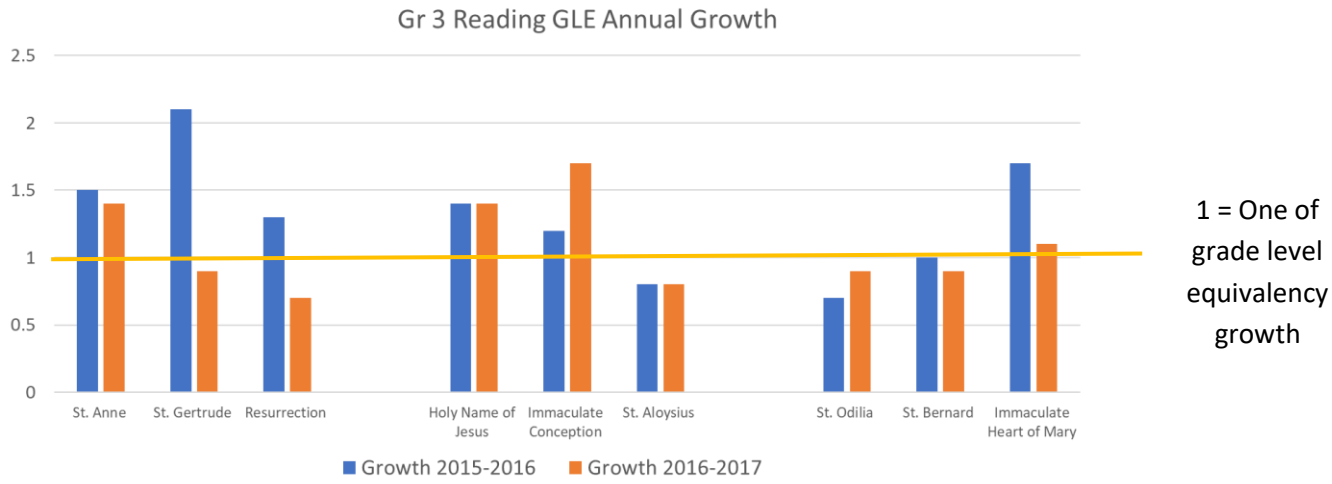
School	Gr 3 2015 - fall	Gr 3 2016 - spring	Difference	Gr 3 2016 - fall	Gr 3 2017 - spring	Difference
St. Anne	3.0	4.5	1.5	2.9	4.3	1.4
St. Gertrude	2.5	4.6	2.1	3.1	4.2	.9
Resurrection	2.6	3.9	1.3	2.9	3.6	.7
Holy Name of Jesus	2.3	3.7	1.4	2.5	3.9	1.4
Immaculate Conception	2.5	3.7	1.2	3.0	4.7	1.7
St. Aloysius	2.4	3.2	.8	2.4	3.2	.8
St. Odilia	2.5	3.2	.7	2.2	3.1	.9
St. Bernard	3.8	4.8	1.0	3.3	4.2	.9
Immaculate Heart of Mary	3.0	4.7	1.7	3.2	4.3	1.1

Contrary to theory, not all students enter the third grade at the 3.0 GLE however. This is especially true given the demographics of the student populations served by many of the schools in the study group. As noted above in Table 3, students in 6 of the 9 schools started the 2015/16 school year in third grade at a second grade level. Subsequently, this data also illustrates the extent of the achievement gap in these schools and highlights the

rationale for leveraging specific interventions such as blended learning to accelerate growth and help students reach grade level equivalency in reading. Given that real world scenario, the following findings from the data analysis of the growth in grade level equivalency for the 3rd graders are significant.

1. Each of the nine schools saw their students' GLE scores grow from the beginning of the school year to the end of the school year with an average pickup of 1.3 (one grade level year and 3 months) in the 2015/16 school year and 1.1 (one grade level year and one month) in the 2016/17 school year. Chart C illustrates which schools had growth that exceeded the traditional one grade level in both school years.

Chart C: Student Achievement in Reading – Grade 3 – GLE Annual Growth



2. For several of the schools (4 in the 2015/16 school year and 5 in the 2016/17 school year) the students' grade level equivalency at the end of 3rd grade was at the 4th grade level or above. While this demonstrates a higher level of proficiency in reading (reading at a 4th grade level in 3rd grade) it also is significant for the student growth context. For example, the median GLE for the incoming third graders at Holy Name of Jesus in fall 2016 was 2.5 (second grade, 5th month). The median GLE for these same third graders at the end of the school year was 3.9, on target for the end of the 3rd grade and representing a growth of one grade level and four months in just one school year. This is an especially significant achievement for Holy Name of Jesus School in their second year of blended learning and directly addresses the school goals of closing the achievement gap with this intervention.
3. As has been demonstrated in other analysis the schools with the most mature blended learning implementations appear to be outpacing the other schools where blended learning is still in its development phase. The highest median GLE scores in the 2015/16 school year were at St Anne Mission, St Bernard, St Gertrude the Great and Immaculate Heart of Mary, all schools with 3+ years of blended learning experience. Following the trend from our prior analysis, Immaculate Conception joins this group of schools with high 3rd grade GLE scores above 4.0 in the 2016/17 school year as well.

Fluctuations in the GLE medians from year to year are expected. It follows that each incoming class may have different strengths and weaknesses relative to reading based upon their prior experiences and the efficacy of previous instruction. One of the key benefits of a blended learning model implementation is the ease in which instruction can be customized or personalized to address individual student needs for remediation or acceleration. The "one size fits all" type of classroom instruction is of the past. However, it follows that spring GLE scores are still highly dependent upon where the students are when they enter the school year. It should be noted that for some students, one year of growth is insufficient to close the achievement gap. More analysis is needed to understand the other factors that influence student growth in reading and to examine the specific impact of the blended learning instructional model in concert with these other determining factors such as model fidelity, teacher effectiveness and instructional material efficacy.

Math achievement

The evaluation of the median grade level equivalencies in math for grades 3 and 8 provide another insight into the blended learning effect on student achievement, both from a growth perspective as well as a proficiency lens. As with the reading analysis, the expectation is that students will enter grade 3 with a GLE of 3.0 and will achieve a minimum of one grade level of growth so that their ending GLE based upon the spring assessment is 4.0, indicating a readiness for 4th grade math. The same holds for the 8th grade. Entry is expected at 8.0 with the summative GLE in the spring at 9.0. As math proficiency is cumulative, this analysis also provides interesting insights into the effect of blended learning in math instruction in the preparation of the students for proficiency in grades 3 and 8. In other words, students' readiness for third grade math (as indicated by a fall GLE of 3.0) indicates the efficacy of instruction in second grade. Efficacy of instruction and student readiness for more advanced content demonstrates the impact of the blended learning implementation.

Based upon that assumption, students entering 3rd grade in the nine study schools are in general well prepared for 3rd grade math based upon their entry point GLE on the fall assessments in both 2015 and 2016. The median GLE for the majority of the schools was 3.0 or higher for both school years. The balance of the schools each had a median 3rd grade GLE that represented the latter half of the second grade year with ranges from 2.6 to 2.9 as illustrated in Table 5. There is also evidence that the high level of preparation and readiness for grade 3 math at the beginning of the school year was further leveraged during the school year by the high GLE medians on the spring assessment. Seven of the nine schools had median GLE on the spring assessments of 4.1 or above, indicating the continued growth in proficiency as measured by grade level equivalency.

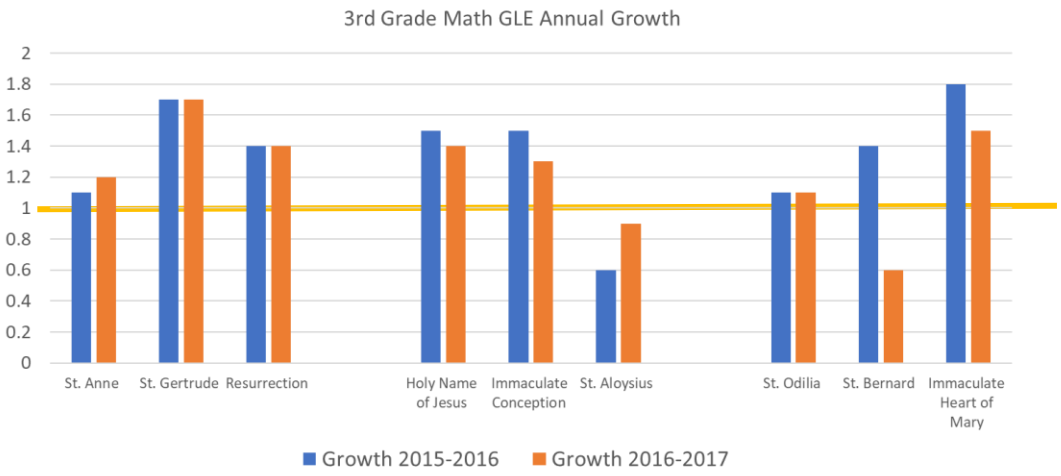
Table 5: Grade 3 Math – Comparative Median Grade Level Equivalency and Annual Growth

School	Gr 3 2015 - fall	Gr 3 2016 - spring	Grade level growth	Gr 3 2016 - fall	Gr 3 2017 - spring	Grade level growth
Seton:						
St. Anne	3.1	4.2	**1.1**	3.3	4.5	**1.2**
St. Gertrude	3.0	4.7	**1.7**	3.2	4.9	**1.7**
Resurrection	2.8	4.2	**1.4**	3.0	4.3	**1.3**
LMU:						
Holy Name of Jesus	2.6	4.1	**1.5**	2.8	4.2	**1.4**
Immaculate Conception	2.9	4.4	**1.5**	3.7	5.0	**1.3**
St. Aloysius	3.2	3.8	**0.6**	2.7	3.6	**0.9**
DCS:						
St. Odilia	2.7	3.8	**1.1**	2.8	3.9	**1.1**
St. Bernard	3.6	5.0	**1.4**	3.3	4.5	**0.6**
Immaculate Heart of Mary	3.1	4.9	**1.8**	3.4	4.9	**1.5**

Additional key findings from this analysis include the following.

1. Each of the nine schools saw their students' GLE scores grow from the beginning of the school year to the end of the school year with an average pickup of 1.3 (one grade level year and 3 months) in the 2015/16 school year and 1.2 (one grade level year and two months) in the 2016/17 school year. Chart D illustrates which schools had growth that exceeded the traditional one grade level in both school years.

Chart D: Student Achievement in Math – Grade 3 – GLE Annual Growth



1 = One of grade level equivalency growth

2. As discussed earlier, student growth is a traditional metric that is highly valued to understand the impact of certain interventions. But evaluating simply on growth can be misleading. When evaluating math proficiency in the study schools, it is important to understand that sustained high performance is not always reflected in a growth metric. For example, the growth metric for St Anne Mission School was 1.1 for the 2015/16 school year and 1.2 for the 2016/17 school year. Achieving one grade level of growth is an important accomplishment but the summative median GLE is a more telling metric for proficiency in this case. For the 2016/17 school year, the median GLE in the fall for the 3rd graders at St Anne was 3.3 with a summative GLE of 4.5, a grade level equivalency of halfway through fourth grade.
3. This analysis of the grade level equivalency in math demonstrates that there is an effective intervention at work closing the achievement gap at these nine schools as illustrated by both the growth and proficiency levels. Several factors not studied in this analysis may be contributing to that efficacy. However, as with the reading analysis, the value of a mature blended learning implementation is notable here as well. Among the highest spring 2017 median grade level equivalencies are at St Anne Mission, St Gertrude the Great, St Bernard and Immaculate Heart of Math Schools, the veterans within the blended learning study cohort. However, we also see high median GLE scores from schools with less maturity in the model such as Immaculate Conception, Resurrection, and Holy Name of Jesus Schools, which may indicate the impact of the model or support provider as well.

As demonstrated in the reading analysis, fluctuations in GLE are to be expected as different cohorts of students have varying levels of proficiency when they enter the next grade level. The incoming median GLE for the 8th graders at the study schools illustrates again the achievement gap. For example, four of the nine schools had incoming 8th grade classes that were preforming below grade level in math in fall 2016. However, seven schools ended the 2016/17 school year with median GLE scores in math that were either at grade level (9.0) or above. Table 6 provides the summary median GLE scores and differential growth from the beginning of the school year to graduation for the 8th grade classes at the study schools from both the 2015/16 and 2016/17 academic years.

Table 6: Grade 8 Math – Comparative Median Grade Level Equivalency and Annual Growth

School	Gr 8 2015 - fall	Gr 8 2016 - spring	Difference	Gr 8 2016 - fall	Gr 8 2017 - spring	Difference
Seton:						
St. Anne	12.4	13.0	**0.6**	11.0	13.0	**2**
St. Gertrude	5.7	6.9	**1.2**	8.2	10.1	**0.9**
Resurrection	7.5	11.7	**4.2**	7.7	8.8	**1.1**
LMU:						
Holy Name of Jesus	6.6	6.8	**0.2**	7.6	9.0	**1.4**
Immaculate Conception	8.9	13.0	**4.1**	12.1	13.0	**0.9**
St. Aloysius	NA	NA		8.8	11.3	**2.5**
DCS:						
St. Odilia	6.5	8.3	**1.8**	6.7	7.8	**2.1**
St. Bernard	11.3	13.0	**1.7**	7.6	10.1	**2.5**
Immaculate Heart of Mary	11.2	13.0	**1.8**	12.1	13.0	**.09**

When evaluating the impact of blended learning on student achievement, two mindsets are essential. Like math instruction, evidence of the impact of blended learning should demonstrate a cumulative effect. To see the cumulative effect of highly effective blended learning, we look for evidence of both consistency of growth within the school, and constancy of proficiency as measured by multiple metrics. Both mindsets (growth and proficiency) can point to the presence of several of the factors noted on page 3 as the critical success factors for blended learning success. In particular, consistency of growth and constancy of proficiency are leading indicators of teachers' effectiveness using the blended learning model.

In this analysis of the 8th grade median GLE scores we see evidence of both consistency of growth and constancy of proficiency.

1. Consistency of growth: The annual growth in the median GLE for 8th grade math was highly consistent from the 2015/16 school year to the 2016/17 school year for Immaculate Heart of Mary (annual GLE growth of 1.7 and 1.7) and St Gertrude (annual GLE growth of 1.2 and .09) Schools. Even with variations in the median GLE for their incoming classes, the consistency of the growth resulted in higher proficiency levels measured by the spring GLE.
2. Constancy of proficiency: The proficiency level as measured by the spring GLE was remarkably constant from the 2015/16 school year to the 2016/17 school year at the following schools, each having a median spring GLE of 13.0 for both school years: St Anne Mission, Immaculate Conception and Immaculate Heart of Mary Schools. Each class of incoming 8th graders had different levels of proficiency, but the

focus on proficiency and the efficacy of the interventions including blended learning resulted in a median GLE of a post high school level for the 8th grade classes.

Examination of the grade level equivalencies provides insights into the impact of blended learning on growth and proficiency measures. Both are important to understand not only the impact of the intervention but to identify exemplars for replication.

Trend lines in reading and math achievement

The findings of this study are inherently limited by the evaluation of only two years of achievement data. To provide a glimpse into a possible future trend lines around the efficacy of blended learning on reading and math achievement, we compared the median spring percentile ranking for grade 3 reading and math from 2016 and 2017 with the interim winter median percentile ranking from 2018. This analysis is not a perfect match as the spring scores are summative and the winter 2018 scores are interim at the midway point in the school year. However, this analysis does provide valuable insights into several of the key findings in this study, most notably the maturity effect in which schools with 3+ years of blended learning experience demonstrate the highest achievements levels across multiple metrics and models.

Chart E documents the median PR for Grade 3 reading for spring 2016, spring 2017 and winter 2018. Similarly, Chart F provides the companion data for Grade 3 math.

Chart E: Grade 3 Reading – Median PR across 3 Testing Periods

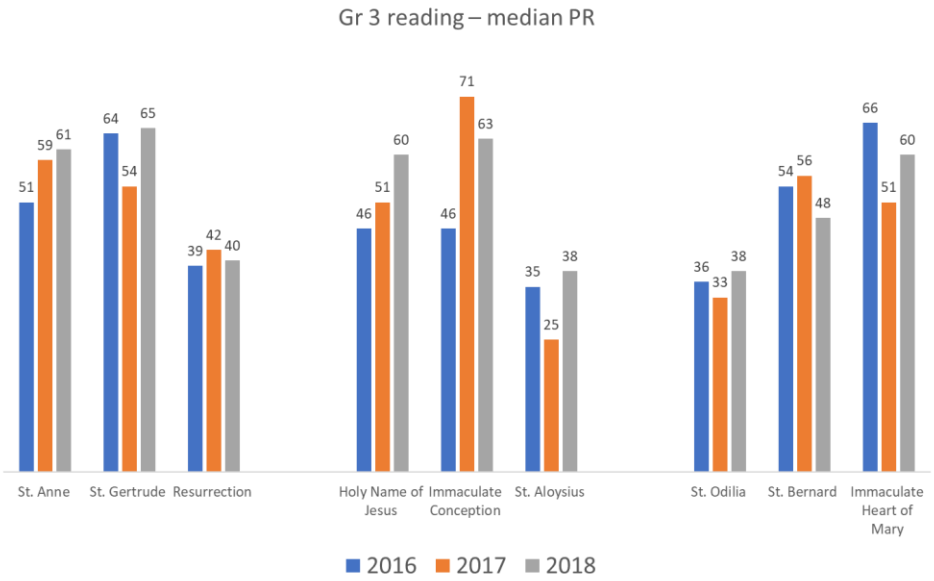
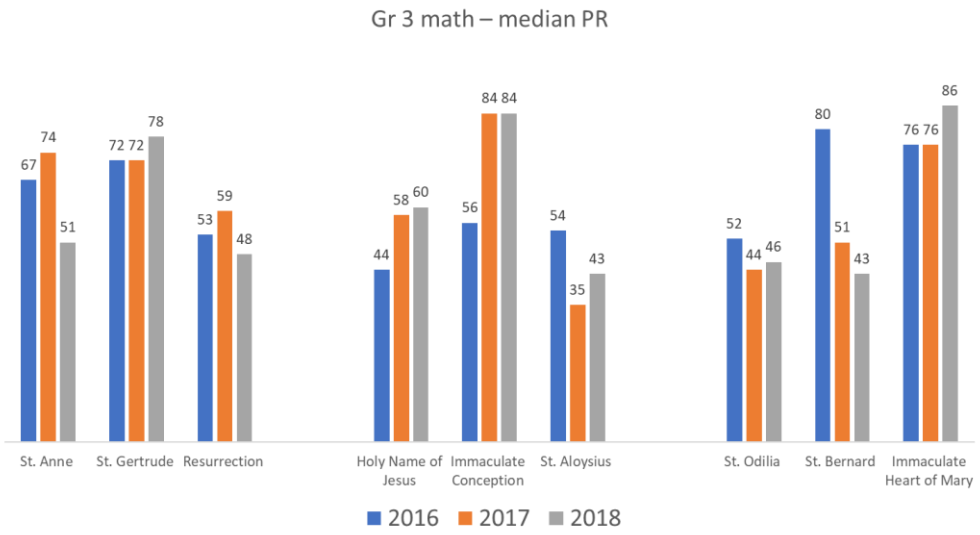


Table 8: Grade 3 Math – Median PR across 3 Testing Periods



Though the winter 2018 median PR scores are interim, not summative results, several of the patterns noticed in the other analyses are already evident in both reading and math.

1. Evidence of the impact of blended learning depends upon a mature implementation where both students and teachers are comfortable with the new instructional practices. Per the report methodology, maturity is represented by 3+ years of blended learning experience. The 2017/18 school year represents year 3 of blended learning for both Holy Name of Jesus and Resurrection School. Based upon the interim winter 2018 median PR in both reading and math, Holy Name of Jesus School appears to be entering that zone of maturity with demonstrative results in student achievement from their blended learning initiative. In both reading and math, the median 3rd grade PR was 60 from the winter 2018 assessment, indicating that 60% of students nationwide performed at a lower level than the Holy Name of Jesus students. Comparatively in spring 2016, that PR score was 46 in reading and 44 in math. Similarly, Resurrection School appears to be within the range of exceeding prior median PR scores as well on their spring summative assessments.
2. Consistency of growth is also an indicator of maturity with the model as well as a school culture that values continuous improvement. The focus on consistency of growth is well represented by the interim results in grade 3 reading for St Anne Mission School students. The median grade level growth in reading for grade 3 students at St Anne has been approximately 15 months of grade level growth over the past two years. The early evidence from the winter 2018 scores indicate that this consistency of growth pattern will continue through the 2017/18 school year for St Anne students. The interim median PR from winter 2018 was 61 compared to 59 for the spring 2017 PR and 51 for spring 2016.

3. Constancy of high performance as an indicator of proficiency is also evident in this interim PR analysis for math. Three schools demonstrated a constancy of high performance in math as measured by grade level equivalencies. These same three schools, St Gertrude the Great, Immaculate Conception and Immaculate Heart of Mary, also have interim PR scores in math that equal or exceed their spring 2017 PR scores. From that we can conclude that their final spring 2018 PR scores will reflect that same constancy of performance and proficiency as evidenced in the grade level equivalencies trend lines.

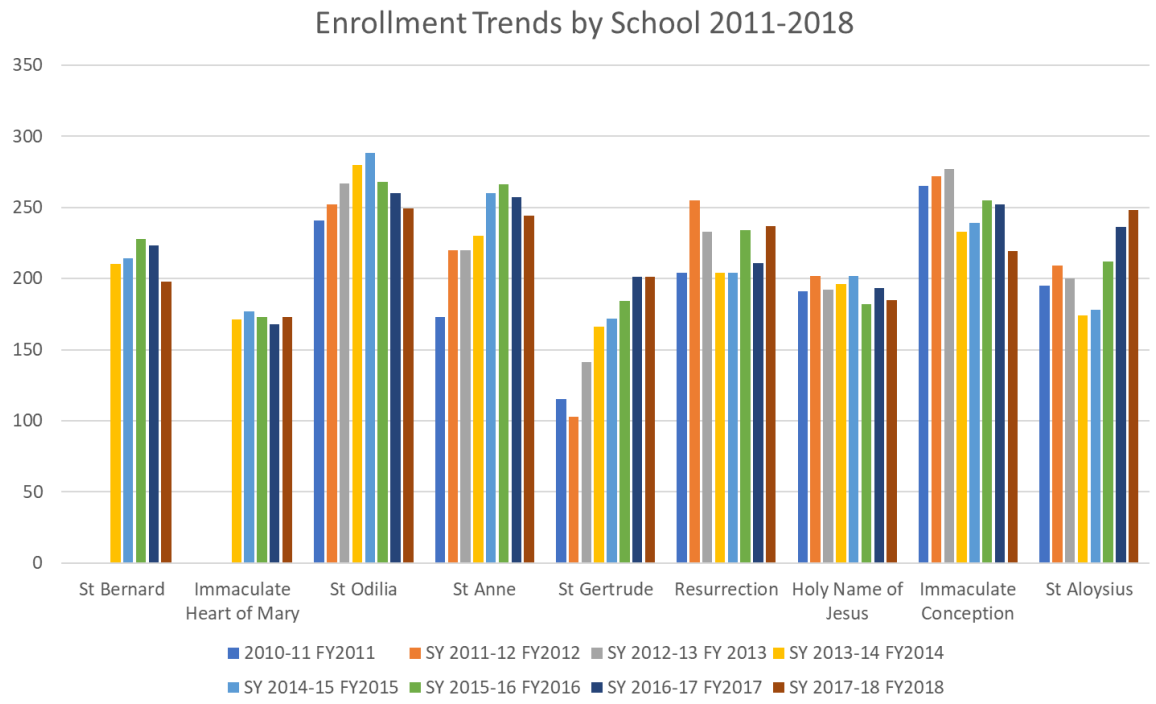
It is challenging of course to predict student achievement levels based upon an analysis of past achievement data alone. However, when examining the impact of a new, innovative intervention such as blended learning, it is imperative to both evaluate critical success factors such as maturity and model as well as to look for trend lines that can indicate the sustainability of the intervention affect. While it is difficult to draw strong conclusions or identify strongly positive correlations without further study, the findings from this analysis of student achievement in nine Catholic schools in Los Angeles indicates that blended learning is an effective tool for closing the achievement gap in reading and math. As noted by Michael Horn and Heather Staker, the journey to sustained innovation is a process. For the nine Catholic schools in this study, the story about their journey to innovation through the implementation of blended learning is still a work in process with new chapters to be scripted in the upcoming school years.

Key Finding #3: Student enrollment growth depends upon many factors

Beyond student achievement results, the second tangible outcome studied in this project was student enrollment. Student enrollment is an important metric for Catholic schools as it is inherently tied to a school's financial health. Student tuition or family contributions is often the backbone of the operating budget of the Catholic K-8 school. The decision for a family to send their children to a Catholic school is often based upon a variety of factors including quality of the instruction as well as the development of Catholic values. To address the quality of instruction factor, the schools in this study made the decision to implement blended learning as an academic intervention to both improve student outcomes and to demonstrate to their communities that they were using innovative teaching and learning practices that potentially were not being implemented in other school choices. The goal was simple: if we can improve the quality of instruction through blended learning, more families will send their children to our schools.

To see if the implementation of blended learning impacted student enrollment, we analyzed enrollment trends from 2011 through 2018 with a focus on the enrollment at the school in the years following the introduction of blended learning. Chart G depicts the school enrollments (number of students) for each school across the studied time period.

Chart G: Enrollment Trends by School 2011-18



The data presented both demonstrates fluctuation in enrollment trends in some schools as well as stability in other schools. The overlay of the start of blended learning does not add clarity to this analysis however. St Gertrude the Great School began their blended learning implementation in the 2014/15 school year. At that point their student enrollment was 172 students. Their enrollment in the 2017/18 school year was 201. However, as Chart G indicates their growth in student enrollment started in the 2011/12 school year and thus we cannot attribute their continued year over year growth in enrollment to blended learning exclusively. Holy Name of Jesus School first implemented blended learning in the 2015/16 school year with an enrollment of 182; their 2017/18 enrollment was 185. Despite two years of blended learning, their enrollment numbers have not changed. At St Aloysius Gonzaga School, the school team attributes their growth in enrollment to their proactive marketing around blended learning. To support that work the school has on staff a marketing director. The increased enrollment at St Aloysius from 212 students in the 2015/16 school year (the year before the implementation of blended learning) to 248 in the 2017/18 school year (the second year of blended learning) may be at least partially attributable to blended learning or at a minimum to the effective marketing efforts in the community.

A key finding of this study therefore is that while it is difficult to draw a direct connection between the implementation of blended learning and increased enrollment, it is noteworthy to recognize that the implementation of blended learning propelled many of the school principals to think differently about how they

were messaging their school's assets and benefits to potential families. This focus on a new marketing message for the community also caused the principals and school teams to more fully explore the benefits of blended learning and to be able to articulate those benefits in a meaningful way to their families. For example, the schools learned that rather than focusing on the technology aspects of blended learning (i.e., *every student will use a computer with interactive games every day for learning*) it was more effective to talk about the teacher-student relationship benefits associated with blended learning (i.e., *your child's teacher will be able to personalize instruction to meet the specific needs of your child*). While we were not able to identify strong trend lines around enrollment directly tied to the implementation of blended learning, the learning process of both understanding the key benefits of blended learning and how to effectively communicate those benefits to parents is an important takeaway from the evolution of blended learning in these nine schools. It may be that the next development in this learning process is how to successfully message increased student achievement with blended learning as a recruitment message.

Key Finding #4: School financial health depends upon many factors

Another key promise of blended learning for the schools is the concept that since the implementation of blended learning should generate increased enrollment and revenue, a school's financial health will improve as well. This concept makes logical sense when assuming these two conditions will result from a school implementation of blended learning:

1. The increase in family contributions from increased enrollment and other fees will result in the school having less dependency upon fundraising income. This will be evidenced by a smaller percentage of the school's operating revenue coming from fundraising.
2. A school's overall financial health will improve when the increase in income from the new enrollments and fees will outpace increased in expenses for school operations, thus providing the school with a revenue surplus.

Obviously, both conditions are very appealing to the schools. To evaluate the impact of blended learning on a school's financial health, the study analyzed the following longitudinal financial data from 2012 through 2017:

- Change in family contributions
- Change in income from fundraising
- Change in total income
- Change in total expense

Two approaches were employed in this analysis. First, the financial data was examined across all schools comparing the 2012 fiscal year with the 2017 fiscal year. Second, the analysis took into account the starting point for blended learning and compared the first fiscal year results with blended learning to the 2017 fiscal year. The results from the second analytical approach are provided here.

Using each school's first year of blended learning implementation as the baseline, the analysis examined the change in two key categories within a school's income portfolio, family contributions and fundraising, from that baseline year to 2017. Additionally, the analysis determined if an increase in family contributions resulted in a decrease in fundraising income. Fundraising income can fluctuate from year to year and thus the idea is that with sustainable family contributions a school's income will be more stable. Family contribution income includes both tuition as well as technology or digital learning fees that many of the schools implemented with the start of their blended learning initiatives. Table 7 provides the results of that analysis and includes the start date for blended learning as a reference point for the data analysis.

Table 7: School Financial Health – Changes in income sources – blended learning baseline vs. 2017

School	Change in family contributions	Change in income from fundraising	Increase in family contributions results with decrease in fundraising income
St. Anne	+23%	-35%	Yes
St. Gertrude	+71%	-10%	Yes
Resurrection	+22%	-21%	Yes
Holy Name of Jesus	+17%	-38%	Yes
Immaculate Conception	+15%	-14%	Yes
St. Aloysius	+27%	+22%	
St. Odilia	+55%	-20%	Yes
St. Bernard	+59%	-9%	Yes
Immaculate Heart of Mary	-3%	+6%	

As Table 7 illustrates, there does not appear to be a direct correlation between blended learning and the income portfolio as the results vary by school and start of the initiative. Eight of the nine schools did receive a greater share of their overall income from family contributions since the start of their blended learning implementations. In some cases that was the result of increased enrollments over the time period as well as the collection of a technology fee per student or per family that was meant to cover some of the operational costs of the technology to support blended learning. In the case of six schools, their increase in family contributions resulted in a decrease in traditional fundraising. Without further study however, it is unclear if the decreases in traditional fundraising was the result of the blended learning implementation or other factors.

The second analysis which examined the changes in the schools' total income vs. total expense also generated more questions than answers. As illustrated in Table 8, contrary to expectations, many schools saw an increase in their overall expenses as a result of blended learning. Two different sets of needs appear to be driving this

situation. First, as schools are just starting with blended learning, there is a need for additional investment in digital tools, content and resources to support blended learning. Thus, for the schools with relatively young implementations within the past two years, such as schools within the LMU collective (Holy Name of Jesus, Immaculate Conception and St Aloysius Gonzaga Schools) the increased expenses make sense.

Table 8: School Financial Health – Changes in total income vs. expense – blended learning baseline vs. 2017

School	Blended learning starting year	Change in total income	Change in total expenses
St. Anne	FY2014	+3%	+67%
St. Gertrude	FY2015	+151%	+146%
Resurrection	FY2016	+6%	+4%
Holy Name of Jesus	FY2016	-10%	+14%
Immaculate Conception	FY2017	+4%	+14%
St. Aloysius	FY2017	+20%	+37%
St. Odilia	FY2013	+10%	+9%
St. Bernard	FY2012	+36%	+50%
Immaculate Heart of Mary	FY2015	-4%	+1%

However, it should also be noted that as the blended learning implementations mature and exceed the three to four year mark of implementation, it is then necessary for the school to refresh their hardware, update their networks and possibly license new content to better meet the needs of their students. This explains the significant increases in expense at St Anne Mission School, St Gertrude the Great School and St Bernard School, each having more than 3 years of experience with blended learning. Given that the students in a blended learning school are most likely using their school computers more frequently than students in non-blended learning environments, it makes sense that the hardware will need to be refreshed more frequently. Additionally, the more mature implementations are also more likely to want to change their instructional digital content around that 3-4 year mark as they have become more savvy consumers and want to license products that directly support their students' instructional needs rather than relying upon general recommendations from partners and others. In many cases these new licenses may be more expensive than the original products.

Financial health analyses such as this are important for helping schools understand how to support and sustain their blended learning initiatives. Too often innovation in schools is closely tied to a singular grant or donation

and when that grant or donation ceases to exist, the innovation ends at the school as well. It is therefore imperative for the schools within this blended learning cohort to closely examine their own financial health metrics and understand how to attain a fiscally sound balance between increased enrollment and family contributions and the operational efficiencies or expenses associated with running a blended learning school. If new sources of income cannot be identified either from increased enrollment, other family contributions, or other sustainable income sources, the sustainability of the benefits and gains earned through the blended learning initiatives may not be fully realized by the students or school community.

Ending thoughts

Blended learning holds significant promise to help schools serving disadvantaged children close the achievement gap in reading and math. The actualization of that promise however requires more than choosing the right rotation model or online curriculum. For blended learning to have a significant impact on student learning as well as school sustainability the implementation process depends upon a carefully curated mix of visionary leadership, well-prepared teachers, a high achieving school culture and a committed parent community. The nine Catholic schools in this study all exhibit strong characteristics for success with blended learning but for each of them, this process is still a journey of discovery and re-invention of traditional practices and norms around education. The goal of this study was to examine evidence of the types of tangible outcomes from the implementation of blended learning that can support sustainability within these schools and replication within a broader set of Catholic schools, both in Los Angeles and across the country. Though limited by the variables that were not studied, the resulting secondary data analysis of student achievement results, enrollment trends and school financial data identified several significant findings that should provide new perspectives for school and community leadership about blended learning possibilities in Catholic education. There is certainly more research work to be done on the potential and realized impact of blended learning in education, but this study with its focus on specific tangible outcomes is an important step in the process of understanding how to evaluate such outcomes in this new learning environment. As with the implementation of blended learning as an education innovation, the process is a journey, not a single event. The same is true for measuring and articulating the impact of blended learning on student achievement and the financial health of Catholic schools. We look forward to continuing to learn from the visionary leaders who are empowering these new educational experiences for their students at these nine innovative schools.

Appendix

About the participating schools in the study

Nine (9) Catholic schools serving students in preschool through Grade 8 in various neighborhoods in Los Angeles participated in the study by providing access to their student achievement data, enrollment trend data and school financial data. In addition, the school principals provided contextual information through a phone interview with Project Tomorrow. The nine schools that participated included:

Holy Name of Jesus School
Immaculate Conception School
Resurrection School
St Aloysius Gonzaga School
St Anne Mission School
St Bernard School
St Gertrude the Great School
St Odilia School

Each of these schools has implemented blended learning using a rotation model in their classrooms over the past few years. For purposes of analysis, the schools were categorized by the first year of blended learning implementation; four classes were identified, starting with the earliest implementations through the most recent. For example, St Anne Mission School which started their blended learning implementation during the 2013-14 school year is in Class 1. Immaculate Conception School began their implementation during the 2016-17 school year (Class 4). The length of time or maturity with blended learning was a key variable in the analysis process. Chart Appendix – 1 indicates the "class" for each school and their start dates for the blended learning implementation at their school. The chart also documents the student enrollment for each school year including before the implementation of the blended learning models.

Chart Appendix - 1: Blended learning start dates for project schools with enrollment statistics

		2010-11	SY 2011-12	SY 2012-13	SY 2013-14	SY 2014-15	SY 2015-16	SY 2016-17	SY 2017-18
School Name		**FY2011**	**FY2012**	**FY 2013**	**FY2014**	**FY2015**	**FY2016**	**FY2017**	**FY2018**
St Bernard	Class 1				210	214	228	223	198
St Odilia	Class 1				280	288	268	260	249
St Anne	Class 1				230	260	266	257	244
Immaculate Heart of Mary	Class 2				171	177	173	168	173
St Gertrude	Class 2				166	172	184	201	201
Resurrection	Class 3				204	204	234	211	237
Holy Name of Jesus	Class 3				196	202	182	193	185
Immaculate Conception	Class 4				233	239	255	252	219
St Aloysius	Class 4				174	178	212	236	248

Key
Pre BL
1st year BL
2nd year BL
3rd year BL
4th year BL
5th year BL +

Another factor that influenced the data analysis was the relationship between the school and a partner who supported their blended learning implementation. Three schools within the study group are part of the Seton Blended Learning Network and received support and technical assistance from the organization in the early years of their blended learning implementation. Seton provides partner schools with the know-how, training, and fundraising required to convert to blended learning with a goal to substantially improve the academic performance and reduce the operating costs of financially struggling urban Catholic schools. Those three schools are: St Anne Mission School, St Gertrude the Great School and Resurrection School.

Three other schools within the study group are part of a Blended Learning Partnership with Loyola Marymount University's Innovation in Digital Education and Leadership (iDEAL) Institute. As part of this partnership, the schools partake in two years of ongoing professional development in pedagogical best practices as well as blended learning best practices. Using the Teacher Leader model foundation from the Center for Math and Science Teaching and the Technology Integration Specialist Certification, the teachers become practitioners that are not only fluent in current teaching pedagogies, but the Teacher Leaders (TLs) are certified through the two programs as well. Those three schools are: Holy Name of Jesus School, Immaculate Conception School and St Aloysius Gonzaga School.

The remaining three schools in the study group are not directly tied to an external partner but receive support and technical assistance from the Archdiocese of Los Angeles, Department of Catholic Schools (DCS). Those three schools are: St Bernard School, Immaculate Heart of Mary School and St Odilia School.

As each partner focused on a unique set of methodologies or support for blended learning, the use of the partner model as a variable to understand efficacy was interesting for the study as well. Table Appendix – 1 summaries the school identification with a partner model.

Table Appendix – 1: Study schools and their primary partners for blended learning

Seton Education Partners	LMU Blended Learning Partnership	ADLA – Department of Catholic Schools
St Anne Mission	Holy Name of Jesus	St Bernard
St Gertrude the Great	Immaculate Conception	Immaculate Heart of Mary
Resurrection	St Aloysius Gonzaga	St Odilia

About the study methodology

The study methodology was fundamentally a secondary data analysis using quantitative data provided by the school and/or the Department of Catholic Schools (DCS) within the Archdiocese. In addition, however, Project Tomorrow also conducted

phone interviews with the school principals to understand the current context of their blended learning implementation. This study also leveraged the prior landscape study that was done by Project Tomorrow to establish a baseline of understanding about the state of blended learning in the 9 study schools.

The student achievement data used in the secondary data analysis was drawn from the Renaissance Learning STAR assessments in reading and math, grades 2-7, across multiple years and testing windows. Both schoolwide data and individual student data was reviewed. Enrollment and financial data was provided by DCS based upon their annual collecting and reporting on that data.

The data analyzed included the following:

- STAR: 2015/16, 2016/17, 2017/18 (fall and winter only)
- STAR: Reading, Math
- STAR: Schoolwide and grade level median PR and SPG
- STAR: All student scores – all testing windows available
- Enrollment: FY 2014-2018 (supplemented with 2011-2013)
- Financials: FY 2012-2017

A key challenge with the study process was the plethora of variables that could influence the outcomes. Though the study did not involve isolating these additional variables, it is helpful to note those variables as potential factors for explaining results or informing future studies. Table Appendix – 2 identifies the additional variables that were in common across the school sites, the divergent variables we were aware of, and other variables that we had less information on but could be impactful.

Table Appendix – 2: Variables influencing the efficacy of the blended learning implementations

In common variables we know about	Divergent variables we know about	Variables we don't know about
✓ Grade levels ✓ Catholic school culture ✓ Blended learning rotation model ✓ Commitment to closing student achievement gaps ✓ School leadership commitment to blended learning	✓ Provider model ✓ Curriculum products ✓ Implementation years ✓ School environment ✓ Prior emphasis on data or gap analysis ✓ Teacher turnover ✓ Student demographics ✓ Technology platforms	✓ Teacher effectiveness ✓ Principal effectiveness ✓ Teacher skills ✓ Teacher attitudes or values ✓ Fidelity to the model ✓ Parental support or satisfaction ✓ Attendance issues

About Project Tomorrow

Project Tomorrow is a global education nonprofit organization dedicated to ensuring that today's students are well prepared to become tomorrow's innovators, leaders and engaged citizens of the world. To achieve this mission, Project Tomorrow focuses on students' learning experiences, both in school and out of school. The organization's program portfolio includes a strong emphasis on the impact of digital tools, content and resources on students' learning lives. With 22 years of experience in education, Project Tomorrow regularly provides consulting and research support around key trends in K-12 science, math, and technology education to school, school districts, government agencies, business, philanthropic organizations and higher education. For more information visit: http://www.tomorrow.org

[i] https://www.christenseninstitute.org/blended-learning-definitions-and-models/