



Implementation of *Pearson enVision Math* 2018-19

A regional high school partnered with the Northeastern Nevada Regional Professional Development Program (NNRPDP) for a mid-year implementation of new math curriculum materials for high school Algebra I and Geometry. Pearson's enVision Math series was selected by the high school's math department members earlier in the year and implementation began in November 2018. Since previous math curriculum materials being used in the Algebra I and Geometry classes were published before the adoption of the Nevada Academic Content Standards (NVACS), the specific goals were:

1. Increase mathematical rigor for students in Algebra I and Geometry.
2. Improve students' scores on the End of Course (EOC) exams, EOC I and EOC II, from the 2017-18 administration.

Instructional Context

The regional high school has a seven-person math department with a median math teaching experience of four years. Five of the members teach at least one section of Algebra I and three members teach at least one section of Geometry. The Pearson enVision Math series has a printed textbook, an electronic textbook, and other online resources which include remediation help and assessment tools. The teachers implemented varying combinations of the resources. One geometry teacher did not adopt the new curriculum materials but continued to use the previous materials.

Initial Data and Planning

The department has a scheduled one hour meeting each week. NNRPDP's Secondary Math Coordinator met with the department seven times, beginning in January 2019, during their weekly meetings to discuss ideas regarding aligning rigor with the EOC exams and the appropriate scope and sequence of the new curriculum materials. Additional days were devoted to individual coaching of department members. Coaching focused on the appropriate use of curriculum materials to increase rigor while maintaining a brisk pace of the teaching of the standards.

Learning Design

The learning design was based on Nevada State Professional Development Standards. This learning opportunity incorporated discussions and reflections encompassing the NVACS for

mathematics. The professional learning was delivered through regularly scheduled weekly meetings and teacher prep times. Coaching occurred in multiple classrooms.

Measurement

To measure the impact on rigor from the Pearson enVision implementation, math department members were given the following survey questions:

1. Describe how your teaching strategies have changed with the implementation of the enVision curriculum materials.
2. Describe the impact of the new curriculum materials on the cognitive rigor of students.
3. Describe any obstacles encountered while implementing the new curriculum materials.

In addition, average student scores on the EOC I and EOC II from the academic year 2018-19 were compared with results from the academic year 2017-18.

Results and Discussion

Responses to the survey by the math department members indicate increased rigor in the tasks and questions posed to students from the curriculum materials. The learning curve for teachers and students as they transitioned to an online format for problem sets and assessments was a concern for department members, especially because of the mid-year implementation.

Q1. Describe how your teaching strategies have changed with the implementation of the enVision curriculum materials.

- Increased rigor requires a focus on application rather than simple computation.
- Whether you are working with a book or with online resources, most, not all, students don't use time outside of class to work on math assignments. So, I adopted a method where I introduced material to them one day and helped them with assigned problems in class the next day. When pushing through material at the end of the year, I didn't find time to remediate on a third day. Additionally, I had woefully little time to remediate tests as we had to keep moving through material to teach the basic concepts that would be tested on the EOC exam.
- enVision has given me a good vehicle for which to present information in an 'I do, We do, You do' model. I am able to use visual representations more consistently, which provides a more concrete method of learning content.

Q2. Describe the impact of the new curriculum materials on the cognitive rigor of students.

- There is a focus on application of ideas. This naturally increases rigor and demands a deeper understanding of the topics.
- The Pearson text is a cut above the previous text in the matter of rigor. At the end of each lesson, you can find practical problems that incorporate lesson content. I heard 'this is hard' too many times to count this year.

- The Pearson enVision has really increased the rigor in all classes. More and more word problems that employ a real-life context are presented.

Q3. Describe any obstacles encountered while implementing the new curriculum materials.

- The speed with which we are forced to cover the material is a little much. The demands and content of the EOC have forced our department to move at a very fast pace. There are several topics that could use additional instructional time.
- I had no obstacles implementing the Pearson text. Our students have not been required to learn at this level of rigor, so they ran against many obstacles. However, the learning resources are embedded in the material for them if they have the drive to use them.
- It was difficult to begin the year with the old materials and then switch gears second quarter. There was a lot of digital technicalities that we had to learn as we went. I would also like to see the junior high kids learning with this content so that they are better prepared for Algebra I.

Figure 1 shows a comparison of EOC I data by teacher between the academic years 2017-18 and 2018-19. An overall increase in student scores for the high school occurred, from 40.93% to 42.38%. Teacher 1 did not teach an Algebra I class in 2018-19. Teacher 2 used the printed version of the textbook exclusively. Teachers 3 and 5 used a combination of print and online resources. Teachers 4 and 6 used the online resources exclusively, which included the electronic textbook, practice problems, and assessments.

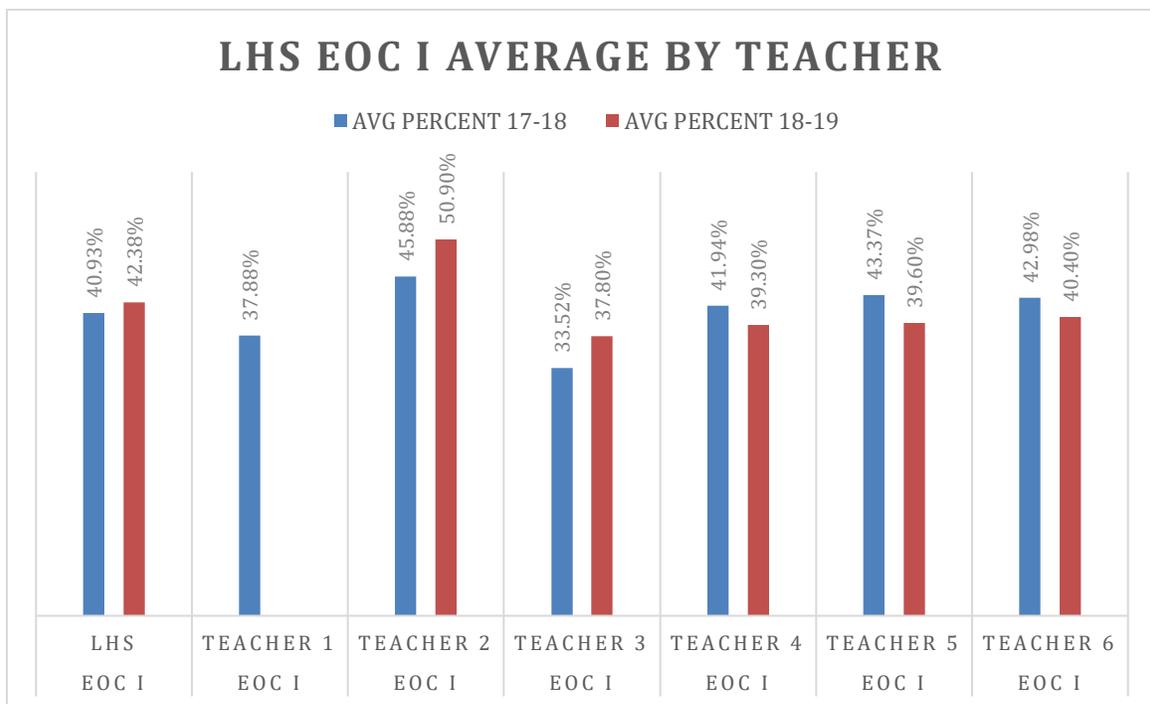


Figure 1: EOC I

Figure 2 shows a comparison of EOC II data by teacher between the academic years 2017-18 and 2018-19. The average student scores increased from 36.03% to 42.56%. Teacher 1 exhibited the greatest gains, employing a combination of Pearson enVision print and online resources. The bulk of coaching by the NNRPDP math coordinator was spent with Teacher 1. Student scores for Teacher 2 remained relatively the same from the previous year. Teacher 2 did not implement the Pearson enVision curriculum materials this year, but continued with the older geometry textbook and resources. Teacher 4 used the online resources exclusively from enVision, showing an increase of 10 percentage points in average student scores.

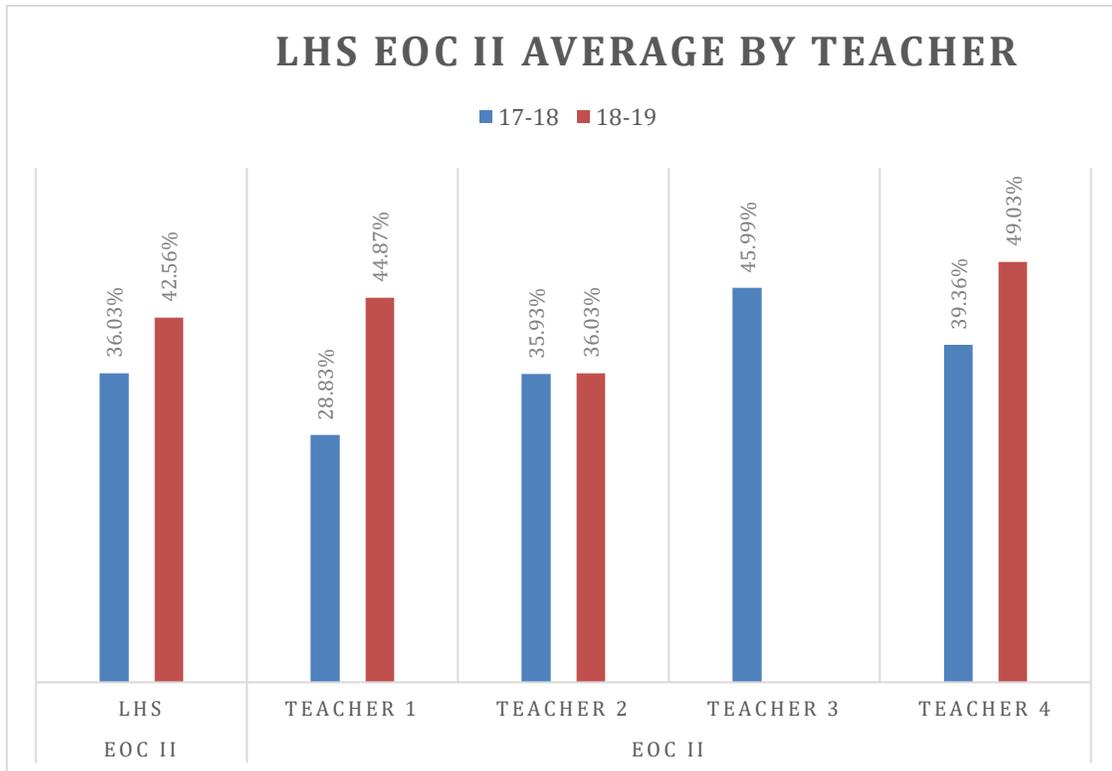


Figure 2: EOC II

Conclusion

Despite the disruption and learning curve for both teachers and students with the new curriculum materials, performance on the Algebra EOC I and Geometry EOC II exams improved from the previous year. Progress was slow for the learning process especially from November through January as students learned to navigate the technical aspects of the online format, accessing and completing assignments and assessments online. Teachers were slowed as they learned how to navigate the logistics of providing access for students and restructuring lessons to increase rigor.

The adoption of the new curriculum materials more closely aligned with the rigor expectations of the NVACS and EOC exams showed the greatest promise for future results in the geometry classes. Student results for the one teacher who did not adopt the new materials

remained flat, while the two teachers who did adopt enVision showed gains of 16 and 10 percentage points, respectively.

The EOC I scores for Algebra I did not show as great of gains. Students are younger and less experienced with the demands of high school. Also, teachers reported a greater gap between the rigor expectations of the previous curriculum materials and the Pearson enVision materials. More time was spent remediating students on background knowledge, reducing time for more cognitively rigorous applications. These issues have been addressed for the upcoming year and full implementation of the curriculum materials. Time has been built into the pacing schedule to acclimate the students to the online format and rigor demands of the high school classes. During the next academic year teachers will also be focusing on mathematical modeling to increase students' conceptual understanding of the mathematics.