



Research Report:
The Effect of Nearpod Usage on
Student Achievement in Hendry County

September 2019

INTRODUCTION

Nearpod is an online platform and content provider that supports student engagement and achievement. By providing teachers with tools and interactive content for learning activities, Nearpod supports schools and districts who are ready to bring teaching into the 21st century. Nearpod is currently being used by 97 of the top 100 US school districts and has a strong fan following in US education.

The theory behind Nearpod is that when teachers utilize Nearpod's combination of high-quality content and research-aligned tools, students will be more engaged, and as a result, they will learn more. The positive impacts associated with Nearpod use have been documented in more than 20 industry and academic publications and while preliminary evidence indicates that Nearpod positively impacts academic achievement,^{1,2,3,4} more rigorous research was necessary to strengthen this claim. In response to this need, MBZ Labs partnered with Nearpod to evaluate the impact of the platform on student achievement. Information gathered during this study will inform future updates to the platform as well as provide evidence of Nearpod's efficacy.

This report provides methods and results from a study conducted during the 2018-2019 school year in collaboration with Hendry School District in Hendry County, Florida. The report includes information about the context of the research, study methodology, and findings. The objective of the study was to investigate the impact of Nearpod usage on student achievement using more rigorous methodology than prior research: specifically including quasi-experimental design combined with matched group comparisons and correlational measures. The following research questions guided the inquiry:

Research Question 1. Does Nearpod usage vary between teachers receiving a specialized Nearpod training (treatment group) and teachers engaged in business as usual (control group)?

Research Question 2. When teachers are supported to use Nearpod as intended (treatment group), do their students perform differently than the control group on standardized state assessments?

¹ Delacruz, 2014

² Krahenbuhl, 2015

³ Lai et al., 2018

⁴ Mattei, 2014

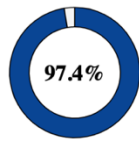


Research Question 3. Is there a relationship between Nearpod usage and student achievement on standardized tests?

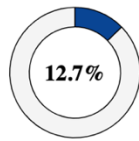
RESEARCH CONTEXT

Hendry School District in Hendry County, Florida is a small rural district. According to the Florida Department of Education, during the 2018-2019 school year, this district enrolled 7,267 students from Pre-K through 12th grade. Of this cohort, 97.4% of students in the district were classified as economically disadvantaged, 12.7% as English Language Learners, and 14.6% as students with disabilities⁵.

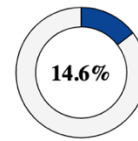
Economically Disadvantaged



English Language Learners

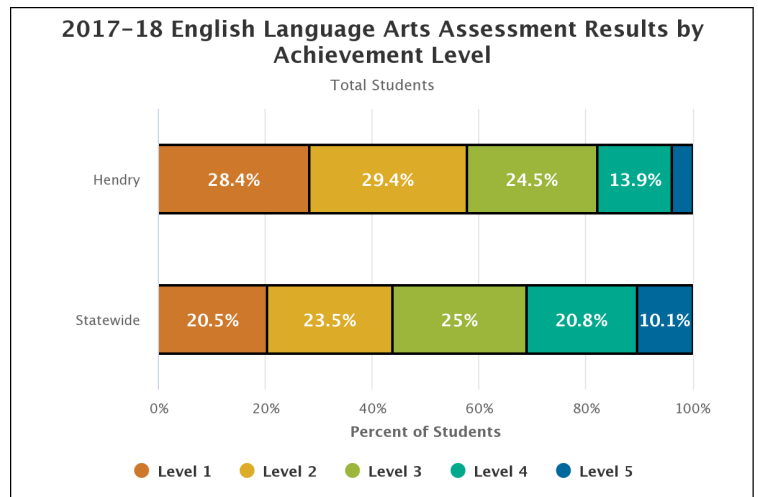


Students with Disabilities



In 2017-2018, Hendry Students performed well below the state average on the statewide English Language Arts (ELA) and Mathematics assessments. In ELA, only 42.2% of Hendry students scored at proficiency levels 3 and up⁶ as compared to 55.9% at the state level in English Language Arts. In math, only 45.1% of Hendry students scored at proficiency levels 3 and up as compared to 59% at the state level.⁵

For Hendry, these gaps were even more pronounced for learner subgroups such as English Language Learners (ELLs). In the fall of 2017, the district introduced two new programs to support student achievement in the district: leveled readers and Nearpod. In the fall of 2018, Hendry decided upon the continued use of the Nearpod platform. To support success of the platform in Hendry during the 2018-2019 school year, the Nearpod customer success team implemented a multi-level training plan. Hendry teachers received three trainings considered to be “business as usual.” These included:



⁵ From Florida Department of Education EduData Portal

⁶ Level 3 is the lowest passing score for each grade level and subject

District Wide Training: general training typical for year 2 implementation consisting of one in-person session with 24 participants.

After School Staff Training: for teachers interested in using Nearpod for the afterschool program consisting of one in-person session with 34 participants.

English Learner Resource Teacher Training: for ELL resource specialists consisting of 2 in-person sessions with 20 participants.

A subset of teachers received additional training:

Nearpod Specialized Training: for teachers already using Nearpod to support students with interest in strengthening their ability to use Nearpod to improve their instructional practices for diverse student populations. This training consisted of 2 in-person training sessions with 15 participants.

The additional specialized training was an opportunity for the Nearpod team to support teachers, increase their understanding of the breadth of Nearpod resources and provide coaching on how to use Nearpod to support diverse learners.

METHODS

Study Design & Participants

Although prior research about the impact of Nearpod use on student achievement was promising, this study sought to examine the relationship between these two variables with a new level of rigor. To deepen understanding of this relationship with increased rigor, MBZ Labs utilized a quasi-experimental design. The teachers who received the Nearpod specialized training and their students were identified as the treatment group (teacher participants n=16, student participants n=884). Participating teachers were chosen by their site administrators as individuals who would benefit from the specialized training. Reasons for selection varied by site and by teacher.

Grade Level	Treatment Teachers
K-5	9 (56%)
6-8	3 (19%)
9-12	4 (25%)



This group was selected as the treatment group in the study because the teachers were trained in using Nearpod as intended by the company and trained to use Nearpod specifically in support of diverse learners. As a part of their participation in the specialized training, they learned more about various Nearpod features and were encouraged to utilize the platform regularly. The tables to the right detail the breakdown of treatment teachers by grade level and subject area.

Subject Matter	Treatment Teachers
Elementary	8 (50%)
ELA	3 (19%)
Science	2 (12.5%)
Social Studies	1 (6%)
EL Resource	2 (12.5%)

In Research Question 1, treatment teacher usage is compared to a control group consisting of all other Nearpod users in the district (n=518). In Research Question 2, student outcomes are compared to a matched sample consisting of all Hendry students taught by teachers who did not receive the specialized training (n=7,066). Research Question 3 looks at the relationship between usage by teacher and student achievement for only those in the treatment group. The next section details the data and statistical methods used to answer each research question.

Data & Statistics

Research Question 1. Does Nearpod usage vary between teachers receiving a specialized Nearpod training (treatment group) and teachers engaged in business as usual (control group)?

Nearpod shared usage data with MBZ Labs including number of lessons launched per teacher in the treatment and control groups. Metadata for lessons were also included indicating the subject and origin of the lessons (Nearpod created content, teacher created content, ELL specific content, and professional development content). The data shared from the company indicated usage by treatment group teachers (n=16) and usage by all other teachers and support staff in the district (n=518).

A Welch Two Sample t-test was used to compare the difference between average usage in the treatment and control groups. Additionally, descriptive statistics were used to compare differences in the subject and origin of lessons.

Research Question 2. When teachers are supported to use Nearpod as intended (treatment group), do their students perform differently than the control group on standardized state assessments?

The impact of Nearpod on student achievement was evaluated using a quasi-experimental design and drawing on the 2017-2018 Florida State Assessment (FSA) data as a baseline for student achievement. Students taught by the 16 teachers who received the specialized training (n=884) were compared to remaining students in the district for whom valid FSA scores were available (n=7,066)⁷.

Because the treatment group was not randomly assigned, analysis was conducted using propensity score matching. Following this method, members of the treatment group are matched to members of the control group using variables that may account for differences between the groups. In this study, the variables for propensity matching included:

- Age
- Gender
- Ethnicity
- Home Language
- Free and Reduced Lunch Status
- Special Education Status
- English Language Learner Status
- 2017-2018 FSA Performance

For each member of the treatment group, a propensity group of similar students were identified using these variables⁸. Propensity matches were formed prior to receipt of 2018-2019 achievement data. Upon receiving this data, differences in student achievement between members of the treatment group and their matched propensity group were examined using a Welch Two Sample t-test.

⁷ All student level data were provided by the Hendry School District IT department and anonymized to protect the identities of students in the district.

⁸ The Propensity Score Matching (PSM) is a statistical method that allows matching of experimental treated groups to nonexperimental comparison groups alleviating bias associated with systemic differences between the two groups. While not as robust at minimizing bias between control and treatment groups when compared with randomized control trial experiments, PSM, nevertheless, provides a method to yield unbiased estimates of a given treatment effect. PSM is considered a quasi-experimental method in that it tests for evidence of causality of the treatment.

PSM requires covariate data to be complete (i.e. no missing data). To ensure complete data the Multiple Imputation by Chained Equations method (MICE) using Fully Conditional Specification was utilized to fill in missing data. This allowed for all treatment students to be matched to a subset of control students thereby maximizing the number of treatment students to compare with controls while minimizing systemic group differences.



Research Question 3. Is there a relationship between Nearpod usage and student achievement on standardized tests?

Hendry County shared student level data for all students enrolled in 2017-2018. Within this data set, Hendry indicated a student's teacher only for those students in the treatment group (resources prohibited student schedule data for the entire sample). These data, used alongside the teacher usage data provided by Nearpod, allowed for an analysis of the relationship between Nearpod usage and student achievement within the treatment group. This relationship was calculated using Pearson Correlation.

RESULTS & DISCUSSION

Research Question 1. Does Nearpod usage vary between teachers receiving a specialized Nearpod training (treatment group) and teachers engaged in business as usual (control group)?

The treatment group used Nearpod significantly more than the control group.

There was a statistically significant difference in usage between the treatment group and control group. Although both groups exhibited substantial variability in usage, teachers in the treatment group (M= 72 sessions launched in 2018-2019) used Nearpod more frequently than teachers in the control group (M=19 sessions launched in 2018-2019) ($t=2.72$; $p < .01$).

In the treatment group, the average Nearpod usage was two times per week. For some teachers in the group, this was as infrequently as one time every other week and for others, this was as frequently as an average of 7 Nearpod lessons per week. In the control group, the average usage amounts to 1 time every other week with variation patterns similar to that observed in the treatment group.

Subject	Control Group	Treatment Group
ELA	34%	35%
Math	16%	13%
Science	27%	44%
Social Studies	13%	6%
Other	10%	2%

The treatment group used more Nearpod ELL content, particularly to teach elementary level ELA.

There was also a difference observed in the percentage of lessons taught per subject and the origin of the lessons. The table to the right summarizes the usage difference by subject. In both the treatment group and control groups, the two subjects taught most often using Nearpod were ELA and Science, but the treatment group used Nearpod Science lessons 44% of the time where the control group only used science lessons 27% of the time. This suggests that the Science lessons in the Nearpod library met a need for Hendry teachers grappling with best practices for teaching diverse learners.

For ELA, the usage trends were quite similar between the treatment and control groups. However, two interesting trends emerge upon a closer examination of ELA usage trends. First, the treatment group used more ELL/ELA lessons than the control

Origin	Control Group	Treatment Group
Teacher Created	49%	51%
Nearpod EL Content	2%	9%
Nearpod Content	49%	40%

group (11% of all ELA lessons originated from the ELL content bank for the treatment group compared to 4% of all ELA lessons originated from the ELL content bank for the control group). The same is true for the Nearpod ELL content in general. Use of ELL content from the treatment group accounts for 9% of Nearpod usage but only 2% of Nearpod usage by the control group, indicating that with specialized training the treatment teachers recognized the value in this content strand for teaching diverse learners.

The second trend in the ELA usage data relates to grade level. When looking at Nearpod ELA usage in elementary grades it becomes clear that this content is valued by Hendry elementary teachers. When focusing on ELA usage to elementary grades only (K-5) the percentage of usage increases to 57% of all lessons in the treatment group and 72% of all lessons in the control group. This indicates that ELA content is particularly useful for elementary grade teachers in Hendry regardless of their level of Nearpod training.



Research Question 2. When teachers are supported to use Nearpod as intended (treatment group), do their students perform differently than the control group on standardized state assessments?

The treatment group scored significantly higher than the control group on the state ELA assessment.

There was a statically significant difference in academic achievement between the treatment group and control group. Students in the treatment group scored significantly higher on their ELA FSA (M= 2.42) than their matched propensity groups (M=2.27) (t=1.98; p < .05)⁹. There was also a difference in the amount of growth students made between 2017-18 and 2018-19. When examining student change in scaled score from one year to the next, students in the treatment group made more growth (M=7.33) as compared to the control group (M=5.87) (t=1.81; p=.07)¹⁰. This difference, taken along with the high frequency of Nearpod usage for ELA in the treatment group (35% in K-12, 57% K-5) indicates that implementation of Nearpod usage for ELA, when following recommended usage from the company, has a positive impact on student achievement above and beyond alternatives used in the control group .

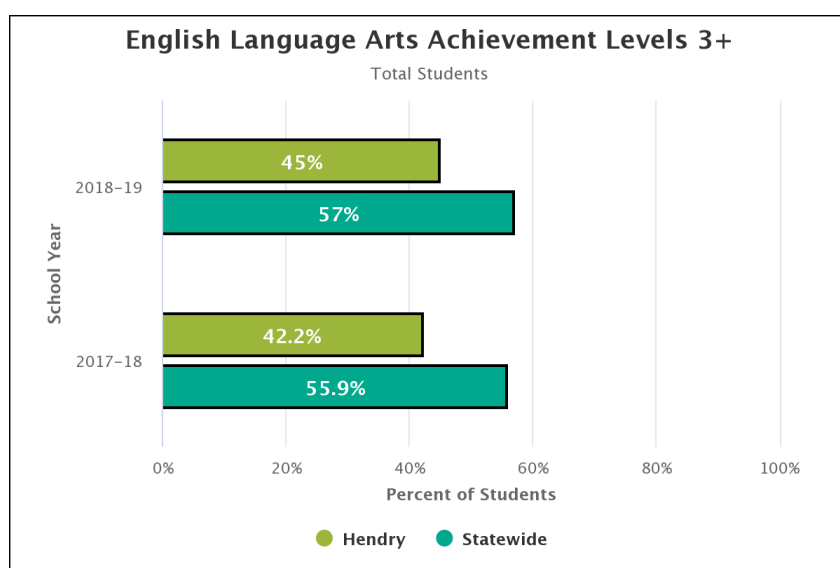
As noted in the discussion of the results for RQ1, the data indicate particularly strong ELA usage in elementary grades. The data also indicate that Nearpod ELL/ELA content is used more often by those in the treatment group than the control, which may be a factor contributing to variation between the groups when it comes to ELA achievement. Since the treatment and control groups used Nearpod ELA at similar rates (35% and 34% respectively), it is possible that the overall higher frequency of Nearpod usage and the focus on Nearpod ELA content in elementary classes were contributing factors to the better outcomes for treatment students than for control students. Another potential contributing factor could be the higher percentage of ELL content used in ELA instruction in the treatment group (11% of all ELA lessons) as opposed to the control group (4% of all ELA lessons).

⁹ This statistic uses the FSA achievement level (scale=1-5). A statistical difference, at a level approaching significance, was also found when comparing the scaled scores of the treatment students (M=334) to their propensity matches (M=330) (t=1.79; p=.07)

¹⁰ This trend was also observable in analysis of the achievement level, but the result was non-significant, likely due to ceiling/floor effects introduced by the 5-point scale.

Usage of ELA content by both the treatment and control groups may have contributed to district wide improvement on the state ELA assessment from 2018 to 2019.

When looking at the achievement in ELA alongside the usage trends, it is possible to extrapolate a value of this content for all Hendry teachers despite differences in usage between the treatment and control group. This interpretation is consistent with the overall improvement in ELA by Hendry students from 2018 to 2019 (see graph below¹¹).



The treatment group scored higher than the control group on the state Math assessment, but this difference was not significant.

Students in the treatment group also had higher achievement levels and scaled scores on the Math FSA than their propensity matched control group students. While this is true, this difference was not significant. There are several possible explanations that may explain why there was a significant difference in ELA but not math. The first explanation is that there were no middle or high school math teachers in the treatment group, so math instruction was not a focus or a priority for the group as compared to the control group which contained middle and high school math teachers. The second explanation is that the treatment group used math content less frequently than the control group (13% treatment vs. 16% control). Even if the

¹¹ From Florida Department of Education EduData Portal



Nearpod content for math teaching was an extremely powerful intervention, usage less often than 15% of the time was not substantial enough to significantly improve math outcomes for diverse learners. One other potential explanation is that math scores are typically less pliable than ELA scores in general. Students are more likely to be 'tracked' in math and more likely to hold a fixed mindset about their mathematical abilities. Given this, it may be harder to generate statistically noticeable improvements in math relative to ELA. Thus, despite the lack of significance, the differences are promising, and more research is needed to determine the impact of Nearpod usage for math and math achievement levels.

Research Question 3. *Is there a relationship between Nearpod usage and student achievement on standardized tests?*

There is a strong positive correlation between use of Nearpod lesson content and academic achievement scores in ELA and math. The relationship is even stronger between ELL content and academic achievement.

Within the treatment group, there was a strong positive correlation between lesson usage and student achievement on ELA state tests ($r(92) = 0.41, p < .001$). This means that 16% of the difference in achievement scores can be explained by Nearpod usage. This phenomenon was even more pronounced when calculating the correlation between usage of Nearpod ELL content (specifically math and ELA lessons from the ELL content bank) and ELA achievement (tests ($r(72) = 0.83, p < .001$)). In this case, 69% of the difference in achievement can be explained by Nearpod usage.

The correlation was also observed between Nearpod usage and math state test scores ($r(54) = 0.57, p < .001$), with 35% of the difference in achievement observed being attributable to Nearpod usage. Here again, the correlation was stronger when looking specifically at Nearpod ELL content tests ($r(33) = .81, p < .001$) with 66% of the difference in achievement attributable to Nearpod usage.

Remembering that correlation does not indicate causation, there are multiple possible interpretations of these results. The first is that Nearpod usage occurred more frequently with students that have higher academic aptitude. This interpretation loses some merit when these results are taken into account alongside the results from Research Question 2. In those results, we saw that when controlling for prior academic aptitude (through the use of propensity-score matched groups), students in the treatment group performed significantly higher than students in the control group on ELA assessments. While these correlations recount trends for the

treatment group only, the variation in usage and outcomes within the treatment group are consistent with findings that resulted from comparing the treatment and control groups. The alternative explanation is that Nearpod was deployed regardless of aptitude and students who frequently engaged with Nearpod content outperformed their peers in part due to their usage of the platform and content. Again, the results of Research Question 2 lend some credibility to the latter explanation here, particularly when it comes to ELA. More research is needed to clearly understand the relationship between usage of Nearpod Math content and student achievement in math.

CONCLUSION

Nearpod is a platform that aims to increase student engagement and academic achievement. This study sought to examine the relationship between Nearpod usage and academic achievement in the context of highly diverse K-12 students. As part of the study, quasi-experimental methods were employed in order to verify and validate the findings in the existing literature with increased rigor.

In comparing students whose teachers learned about ideal Nearpod engagement for diverse learners to matched propensity students in a control group, there was strong statistical evidence indicating:

1. Students in the treatment group used Nearpod more frequently than students in the control group.
2. Students in the treatment group scored significantly higher on state assessments of English Arts than students in the control group.
3. Within the treatment group, there was a strong positive correlation between Nearpod usage and academic achievement in both English Language Arts and Math.
4. Given the robust sample which includes over 7,000 students from 10 school sites in a highly diverse school district, the evidence presented in this report is consistent with Tier 2 Evidence according to the United States Every Student Succeeds Act (ESSA).

For future work examining the relationship between Nearpod and academic achievement or for schools and districts interested in replicating the findings of this report in their own context, the researchers recommend a strong consistent alignment between desired outcomes and types of Nearpod content used. For example, for those wishing to support



ELLs in ELA, it is recommended that teachers are oriented to the relevant content banks and encouraged to use this content regularly (2x per week or more). Nearpod is a robust platform that has numerous options for implementation, many of which can and will support student achievement but to increase the likelihood of these findings, it is essential that the tools and content within this platform are leveraged strategically and that implementation is supported by strong and recurrent professional development for teachers focusing on strong alignment between desired outcomes and relevant content.

About MBZ Labs

MBZ Labs is an independent research organization that helps clients understand, achieve, and sustain their visions for teaching and learning. MBZ Labs answers critical efficacy questions for educational technology companies, funders, and organizations as they strive to understand whether, how and why EdTech products and programs are working as intended. Their suite of research capabilities is designed to build background for clients, and to condense learning sciences and educational research into succinct, actionable insights. These insights enable clients to efficiently understand research, and to apply that understanding to inform product and business development strategies. MBZ Labs also conducts independent research projects that allow clients to understand and communicate about the efficacy of their educational products and programs in a way that is research based, authentic and relevant in our fast-evolving world. To learn more, visit: mbzlabs.com.

About Nearpod

Nearpod, named EdTech Digest's Company of the Year in 2018, is the most comprehensive Student Engagement Platform for K-12 teachers. Nearpod works with any classroom technology from tablets and smartphones to laptops and Chromebooks to help engage students with activities such as Virtual Reality, PhET and Desmos, and with more than 7,000 ready-to-run lessons created in partnership with leading brands like Common Sense Education and the Pulitzer Center. Nearpod recently acquired Flocabulary, a learning platform that helps students thrive by bringing the K-12 curriculum to life through hip-hop. Beyond classroom instruction, the company revitalizes teacher development through Teacher Professional Learning content that cultivates classroom-changing strategies for educators. To learn more, visit: nearpod.com.

Project Sponsored By:  nearpod



REFERENCES

Buuren, S. V., & Groothuis-Oudshoorn, K. (2010). MICE: Multivariate imputation by chained equations in R. *Journal of statistical software*, 1-68.

Dehejia, R. H., & Wahba, S. (2002). Propensity score-matching methods for nonexperimental causal studies. *Review of Economics and statistics*, 84(1), 151-161.

Delacruz, S. (2014). Using Nearpod in elementary guided reading groups. *TechTrends*, 58(5), 62-69.

Lai, C.-L., Hwang, G.-J., Tu, Y.-H., Gwo-Jen Hwang, B., Yi-Hsuan Tu, B., Hwang, G.-J., & Tu, Y.-H. (2018). The effects of computer-supported self-regulation in science inquiry on learning outcomes, learning processes, and self-efficacy. *Educational Technology Research and Development*, 1-30.

Krahenbuhl, K., & Smith, K. (2015). Nearpod: A Technology Tool to Engage Students in Inquiry. *Questioning Strategies*, 10(9).

Mattei, M. D. ., & Ennis, E. (2014). Continuous, Real-Time Assessment of Every Students' Progress in the Flipped Higher Education Classroom Using Nearpod. *Journal of Learning in Higher Education*, 10(1), 1-7.