The Evidence for Better Student Outcomes with Interactive Tools

OneScreen

Table of Contents

Who is this eBook for?

People enter the field of education for all kinds of reasons but those who stay tend to do it for one reason alone: To help children succeed.

School leaders occupy an enviable position in this regard, despite all the frustrations and conflicts they face daily. While parents can help individual students, school leaders can take it one step further.

When they find a way to improve their local learning environment, even incrementally, they dial up the success factor for students across the region and across generations.

That is who this eBook was meant for. School leaders like superintendents, principals, classroom technology specialists, instructional designers and all the dedicated educators who put student achievement first.

Key Takeaways

1. Interactive tools, in the hands of dedicated teachers, measurably contribute to better student progress overall.

2. Students with access to multiple interactive learning tools gain more sensory connection points for better information retention and recall.

3. Collaboration, cooperation and modern classroom design help children take ownership of their learning path and result in better outcomes.

Introduction

Outcomes are what matter most to stakeholders in education today.

No matter what the local metrics or priorities might be, school leaders are overwhelmingly judged by how well their students progress on the path to becoming capable, knowledgeable, self-sufficient and productive citizens. While a great deal of that may be outside of their control, educators can make the biggest impact on outcomes by arranging the learning environment itself. They can carefully choose which teaching tools can best serve their students.

What is the best environment to foster learning? Teachers, superintendents, school boards and many in the educational community have experimented with potential answers to that question for more than a century.

Over the past few years, though, those efforts have intensified due to a wave of poor performance numbers in basic fields like Reading and Math. The cumulative effect has been called "learning loss" or "interrupted learning."

Factors that could help to reverse that trend have taken on greater significance as expectations placed on district leaders have risen. As a result, more academic studies have concentrated on determining the elements of the most effective classrooms.

This paper reviews the research and evidence for better outcomes with interactive tools. The studies indicate that interactive tools, in the hands of dedicated teachers and administrators, measurably contribute to better student progress overall.

"The studies indicate that interactive tools, in the hands of dedicated teachers and administrators, measurably contribute to better student progress overall."

part 1

Learning Gains from Interactive Tools Over Lectures

In the past, interactive learning usually took place when students collaborated in small groups on various projects and during Q&A sessions. Fortunately, major technological progress has greatly improved interactive learning.

Over the last several decades, research has shown that gamification and interactive learning techniques boost student participation and yield stronger educational outcomes. A 15-week Harvard study in 2019 compared student input about traditional learning versus active learning methods. (Deslauriers, 2019)

The majority of students surveyed scored higher on tests with interactive learning compared to traditional instruction and lecture sessions. The point of interest is that even though students felt like they were learning more from a traditional lecture, their tests proved that they actually retained more with interactive tools.

“Even though students felt like they were learning more from a traditional lecture, their tests proved that they actually retained more with interactive tools.”

The chart below shows the improvement in test scores from interactive learning, even though students felt like they learned more from lectures.

Researchers gave several possible reasons for the disconnect, including:

1. Students may not be the best judges of which methods help them learn most effectively.

2. The introduction of something different into the familiar classroom is often met with initial skepticism.

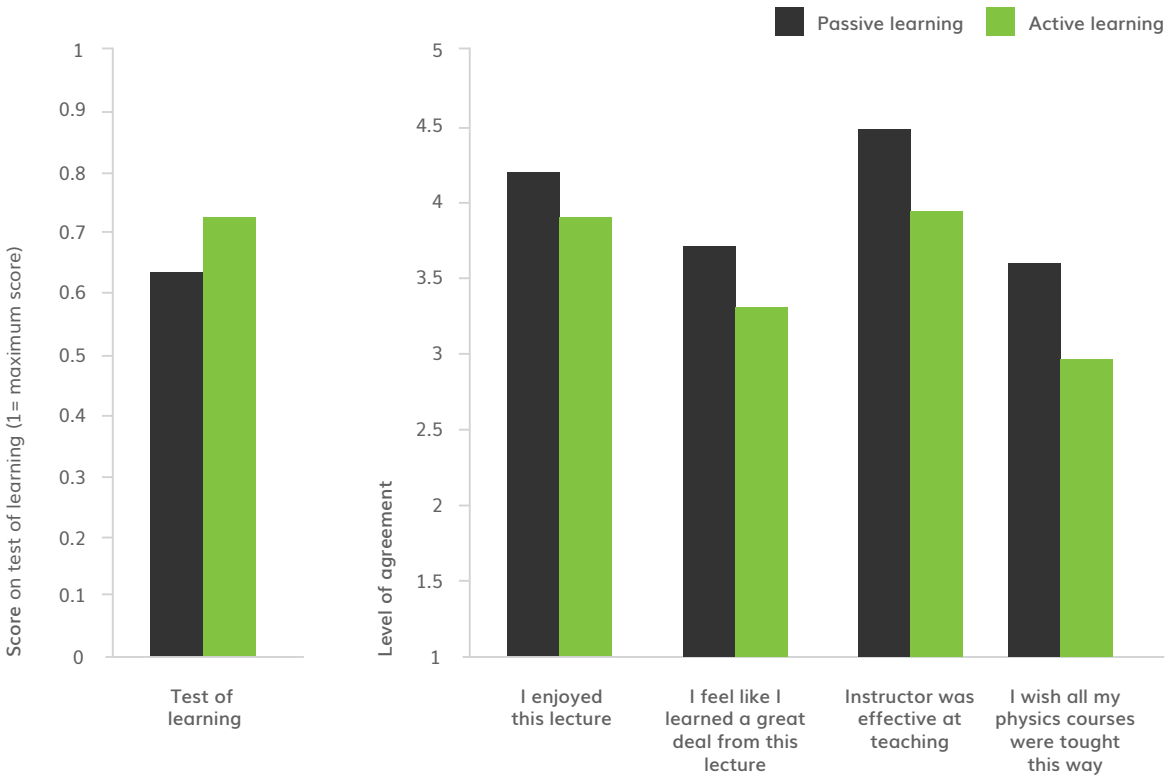
3. The greater cognitive efforts and productive struggle involved in real learning gains could have felt uncomfortable.

4. Students valued time with the teachers and interpreted the questions as indirect criticism of the teaching.

They then created a control group where teachers presented an overview of interactive learning concepts and evidence at the beginning of the semester. In this group, 75% of students said that this helped them feel more favorably toward changes in the routine.

Researchers concluded that, "The success of active learning will be greatly enhanced if students accept that it leads to deeper learning—and acknowledge that it may sometimes feel like exactly the opposite is true."

Higher Test Scores from Interactivity Than Lectures



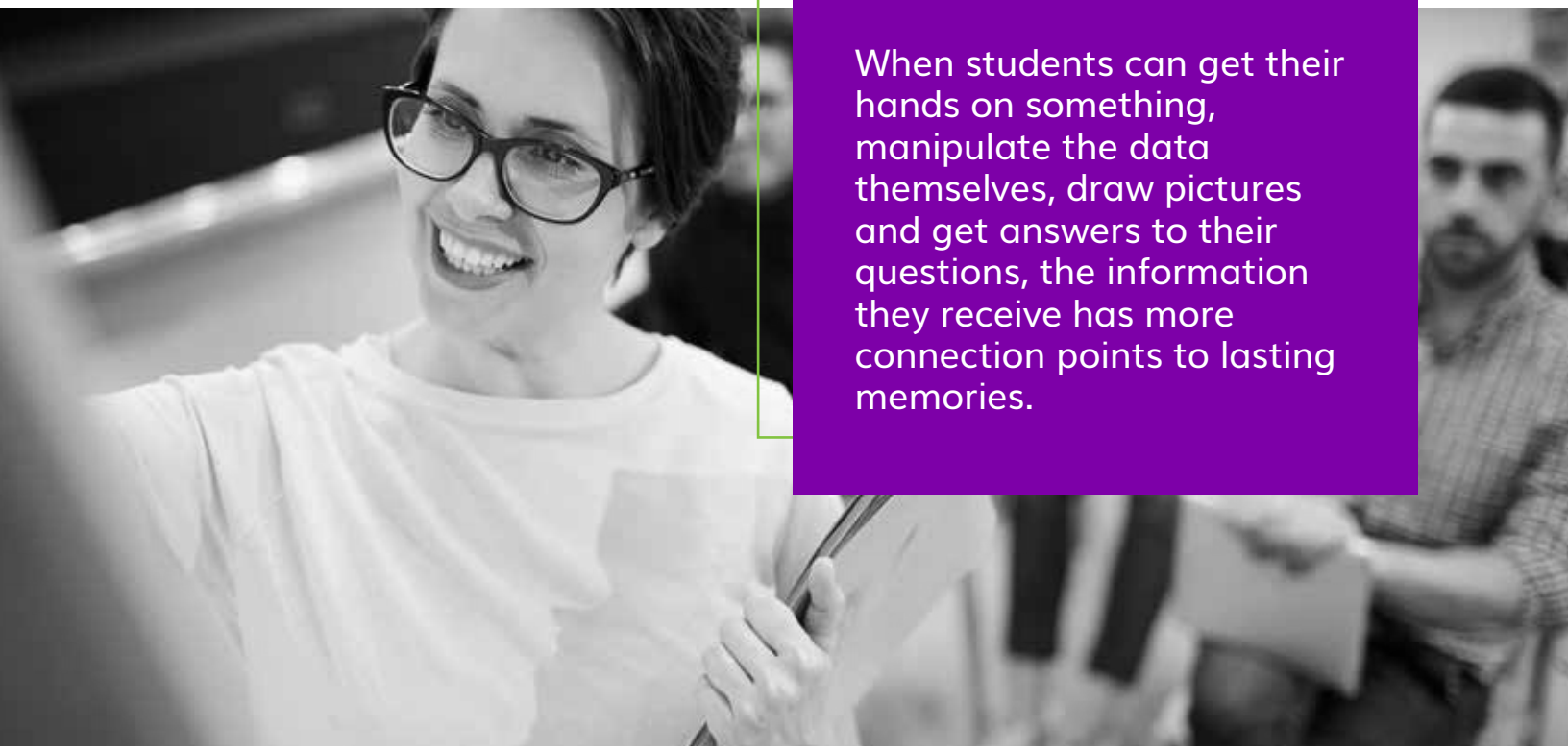
Children today grow up understanding technology in a way no other generation has and there is no going back, even if we wanted to.

As the speed of information has accelerated with new technology, attention spans seem to be getting shorter. How do you keep students engaged in a technological world?

A study from Carnegie Mellon University found that interactive activities are 6X more likely to help students learn. (Koedinger, 2015)

When students can get their hands on something, manipulate the data themselves, draw pictures and get answers to their questions, the information they receive has more connection points to lasting memories.

Teachers can incorporate all kinds of different media into their lesson plans - diagrams, recorded history, animations, video of world events - and then change up the lesson in real-time to adapt to classroom enthusiasm.



When students can get their hands on something, manipulate the data themselves, draw pictures and get answers to their questions, the information they receive has more connection points to lasting memories.

part 2

Moving from Hands-on to Minds-on Learning

Interactive learning is delivering measurable improvements in academic performance in schools around the country. That's the conclusion from a review of research papers from researchers at Carnegie Mellon, Harvard, Stanford and the University of Washington. Findings by the Human-Computer Interaction Institute (HCII) at Carnegie Mellon University were based on studies that compared student achievement using interactive whiteboards and online learning tools to traditional strategies like lectures and reading. (Yannier, 2021)

These studies highlighted several surprises in terms of how students actually learn. Traditionally, teachers are thought of as leaders in the classroom who transfer knowledge to their students. One study showed that more students retained more information when they were able to produce their own questions and get feedback from the teacher.

Results like these help explain why students who take on responsibility for their own learning through interactive lessons tend to achieve better outcomes. Researchers found evidence that physical activity in the learning space sparked greater creativity and idea generation among the students.

> Students who take on responsibility for their own learning tend to achieve better outcomes.

4 Benefits of Interactive Whiteboards

The simple act of putting students in front of an interactive whiteboard can shift the ownership of the learning process from the teacher to the student. Interactive whiteboards allow teachers and students to interact directly with the displayed content using touch, digital pens, or other input devices.

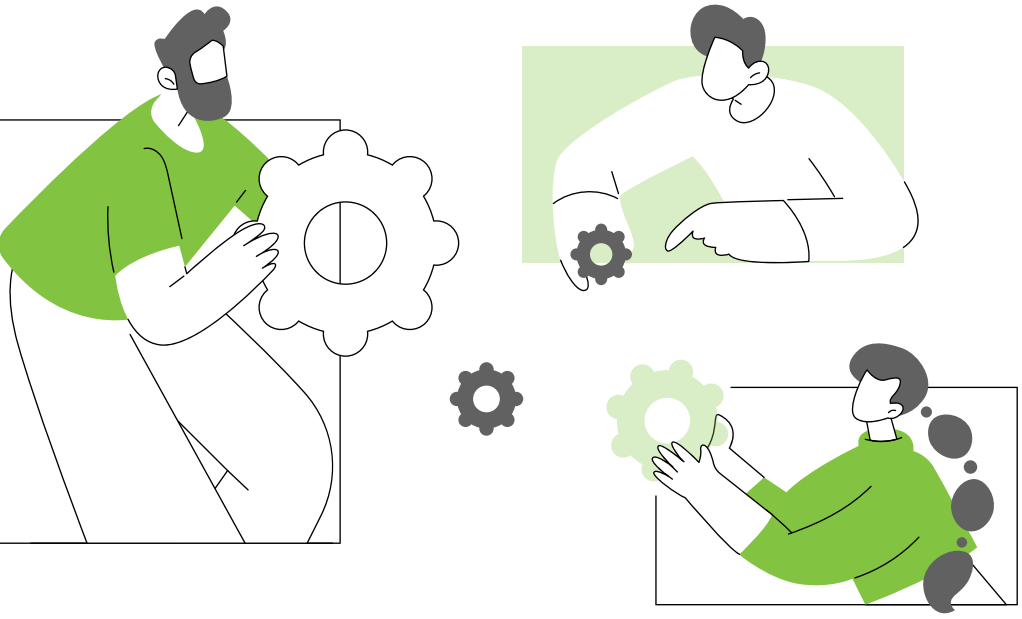
By combining the features of a traditional whiteboard with the capabilities of a computer, interactive whiteboards enable dynamic and immersive learning experiences.

1. Every lesson on an interactive whiteboard becomes a visual, auditory and tactile learning experience. Students who engage more of their senses tend to demonstrate better knowledge retention and a personal connection to the subject matter.

2. Teachers gain access to virtually unlimited multimedia models to help explain complex concepts. They can bring students into the discussion with photos, illustrations, sound recordings, videos and interactive learning games.

3. Collaboration and teamwork are easier to organize with an interactive whiteboard. Teachers can allow student groups to share their presentations on the big screen from any laptop, chromebook or tablet.

4. An interactive whiteboard makes it easier for teachers to bring up and switch between the online learning tools that they already use. Everything is in one place and doesn't slow down the flow of learning.



part 2

4 Applications of Interactive Whiteboards

Interactive whiteboards find applications across various subjects and grade levels. Here are some examples of how interactive whiteboards can be used in different educational contexts:

1. Math - Teachers can bring students up to the board to solve interactive math puzzles, write notes on lesson materials and create rotating geometic shapes.

2. Science - Videos of experiments, historic events and interviews with scientists make science more exciting.

3. Language Arts - Reading and writing assignments offline are more fun when enhanced with annotation, group polling and competitive vocabulary games.

4. Social Studies - Instead of memorizing names and dates, students can tell stories in front of the class with animation, video and competitive quizzes.

4 Tips for Implementing Interactive Whiteboards

The transition to a more interactive classroom takes planning, training, administrative support and dedication from teachers.

These tips shorten the learning curve:

1. Training and help is key, not only before the tech arrives but continuously until teachers feel comfortable with the new normal.

2. Look for lesson materials that maximize the capilities of the interactive whiteboard. Check in with teachers at other schools who already use the tech.

3. Students may be familiar with how touchscreens work but they may need encouragement to use them in front of the class. Games and quizzes are great icebreakers.

4. Teachers can use the interactive whiteboard tools to get assessments and feedback in real-time. They can monitor student progress to create individual learning plans.

The Elements of a Better Learning Environment

Some classrooms are just better by design, making it easier for teachers to lock in student attention and for students to lock in performance gains.

MOVEMENT MATTERS

In the past, students were often told to stop fidgeting and sit still. The evidence shows the opposite is the best way to learn. Standing desks, movable seats and flexible classrooms stimulate learning by keeping students active. Touchscreens are also a powerful tool for getting students up out of their seats and taking control of their own learning. (Benden, 2011)

> *Students were more focused, and I could keep their attention for longer.*
> *- Teacher survey, American Journal of Public Health*

CUT THE CLUTTER

Many modern classrooms feature brightly colored posters, student projects, mnemonic devices and storage boxes. Though a few reminders can be valuable, research shows that less is more. Too much clutter ends up being distracting for students and frustrating for teachers. (Barrett, 2015) Once again, teachers turn to touchscreens to gather all of their essential information and visual teaching aids in a virtual space, so teachers stay in control for the optimal look and feel of their personalized learning environment.

HANDS-ON HELPS

Multiple studies show that project-based learning with a hands-on component helps students score higher on AP tests. The George Lucas Educational Foundation compiled results from studies on the value of project-based learning. (Lucas Education Research, 2021) They reported student improvement in not just AP exam scores but also in STEAM subject areas, SEL, social studies and informational reading. Touchscreens represent one of the most powerful hands-on teaching tools available for opening up a world of knowledge for students – and it's all at their fingertips.

> *These studies show the positive impact of project-based learning across content areas, grade levels, and for students from all types of backgrounds.*
> *- Lucas Education Research*

Conclusion

School leaders have experimented for many years in search of the most effective learning environment. In reality though, traditional lectures in front of a blackboard to rows of students has taken precedence. This setup has the virtue of simplicity but lacks the value of excellence. Meanwhile, technology has charged ahead, leaving a society vastly different from what it was just a few years ago.

New technology and new approaches are working hand in hand to make education more effective, equitable and inclusive. It may come as no surprise to teachers that interactive tools hold student attention like nothing else. Students have grown up on phones and tablets so touchscreens are second nature to them now.

Among the most powerful new tools for the modern classroom, interactive whiteboards allow teachers to access many of the most engaging inteactive tools at the same time. As the search for the ideal learning environment continues, interactive tools are proving to be one of the most important elements in achieving better student outcomes.

References

1. Deslauriers, L.; McCarty, L.; Miller, K.; Kestin, G. (2019). Measuring actual learning versus feeling of learning in response to being actively engaged in the classroom. ***Proceedings of the National Academy of Sciences***, 116 (39), 19251-19257. https://doi.org/10.1073/pnas.1821936116

2. Rueull, P. (2019, September 4). Lessons in learning. ***The Harvard Gazette***. https://news.harvard.edu/gazette/story/2019/09/-study-shows-that-students-learn-more-when-taking-part-in-classrooms-that-employ-active-learning-strategies/

3. Demco. (2023, April). 3 Evidence-Based Trends for Effective Learning Environments. ***District Administration***. https://districtadministration.com/3-evidence-based-trends-for-effective-learning-environments/

4. Blanding, M. (2015, June). Psychology: Your Attention, Please. ***Princeton Alumni Weekly***. https://paw.princeton.edu/article/psychology-your-attention-please

5. Koedinger, K. et. al. (2015, March). Learning is Not a Spectator Sport. ***Proceedings of the Second ACM Conference on Learning @ Scale*** (111–120). https://doi.org/10.1145/2724660.2724681

6. Rea, S. (2015, September). Students Learn Six Times More With CMU's Simon Initiative Approach Than With MOOCs. ***Carnegie Mellon University News***. https://www.cmu.edu/news/stories/archives/2015/september/moocs-vs-oli.html

7. Yannier, N. , et. all. (2021, September). Active learning: "Hands-on" meets "minds-on". ***Science***. Vol 374, Issue 6563 (26-30). DOI: 10.1126/science.abj9957

8. Aupperlee, A. (2021, October). New Research Shows Learning Is More Effective When Active. ***Carnegie Mellon University News***. https://www.cmu.edu/news/stories/archives/2021/october/active-learning.html

9. Benden, M. et. al. (2011, October). The Impact of Stand-Biased Desks in Classrooms on Calorie Expenditure in Children. ***American Journal of Public Health (AJPH)*** https://ajph.aphapublications.org/doi/10.2105/AJPH.2010.300072

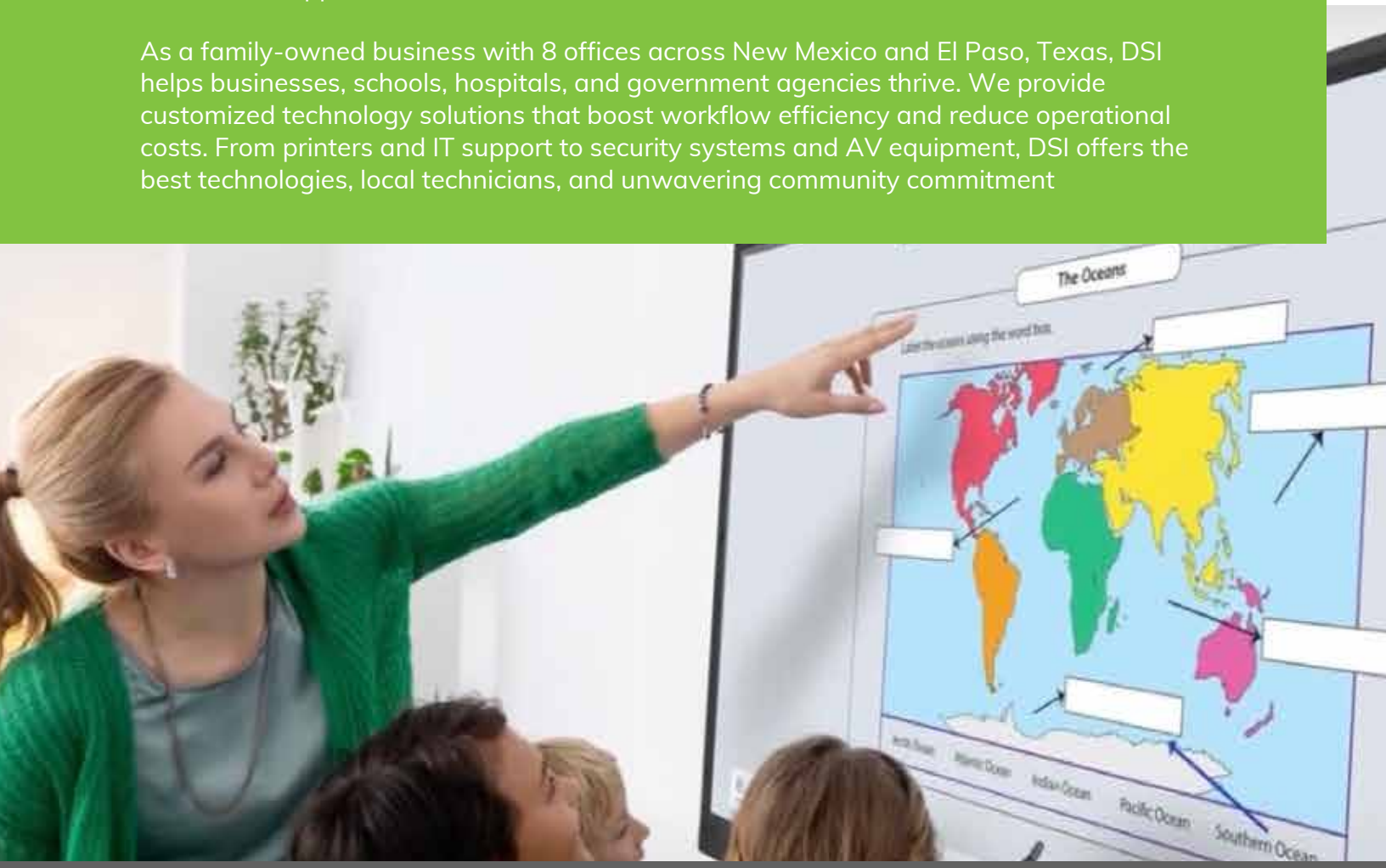
10. Barrett, P, Davies, F. Zhang, Y., Barret, L. (2015. March) The impact of classroom design on pupils' learning: Final results of a holistic, multi-level analysis. ***Building and Environment***. Vol. 89 (118-133) https://doi.org/10.1016/j.buildenv.2015.02.013

11. Lucas Education Research. (2021, April). The Evidence is Clear: ***Rigorous Project-Based Learning is an Effective Lever for Student Success.*** https://www.lucasedresearch.org/wp-content/uloads/2021/04/Research-Summary-of-PBL-Rev1-1.pdf

About DSI - Document Solutions, Inc.

DSI partners with OneScreen, Sharp/NEC, and Virtual Technologies to provide cutting-edge EdTech solutions to New Mexico and El Paso, TX schools. Our interactive whiteboards, video walls, and remote learning tools are backed by 26+ years of industry expertise. We offer free, on-demand technical assistance for our interactive whiteboards, ensuring continuous support.

As a family-owned business with 8 offices across New Mexico and El Paso, Texas, DSI helps businesses, schools, hospitals, and government agencies thrive. We provide customized technology solutions that boost workflow efficiency and reduce operational costs. From printers and IT support to security systems and AV equipment, DSI offers the best technologies, local technicians, and unwavering community commitment



Reach out to DSI today, Call **(888) 386-7834**

Visit our website **www.dsinm.com**

Get the details on our Touchscreens **here**