

SMART Research Summaries

Before investing in technology, it's important to know that the products you're considering are proven to deliver results. To demonstrate the powerful impact SMART products can have on teaching and learning, we've drawn from a large and growing body of research. We've organized these reports into the following sections:

- Impact on teaching and learning
- Motivation and satisfaction
- Mathematics and science
- Literacy and language
- Pedagogy
- Special education
- Additional resources

Read the findings to learn how SMART products can support your education goals.

Impact on teaching and learning

Using Technology to Enhance Student Teachers' Lesson Planning and Classroom Quality of Life – University of Virginia Center for Technology and Teacher Education (2008–09)

In this study, researchers at the University of Virginia conclude that SMART Board™ interactive whiteboards improve student learning outcomes and teacher quality of life when used with appropriate pedagogy and digital resources.

Key findings

- SMART Board interactive whiteboards reduced teacher nervousness by helping them refocus their teaching when diverted from their original lesson plans
- SMART Board interactive whiteboards saved class time, which teachers used to pose more advanced questions
- SMART Notebook™ collaborative learning software enabled student teachers to prepare comprehensive lesson activities by helping them organize their plans and incorporate a variety of digital resources into their files

Read the SMART research brief at smarttech.com/UVA_brief.

Read the final report from the University of Virginia at smarttech.com/UVA_report.

Read the Enhancing Lesson Planning and Quality of Classroom Life report from the University of Virginia at smarttech.com/UVA_quality.

Applying SMART Board Technology in Elementary School Classrooms: Investigation of a School-Wide Initiative – University of New Brunswick Health and Education Research Group (2008)

This report analyzes a year-long study by researchers at the University of New Brunswick. They investigated the impact of combining relevant professional development with the use of SMART Board interactive whiteboards during a school-wide SMART product implementation.

Key findings

- Combining professional development with the use of SMART Board interactive whiteboards improved teachers' knowledge, confidence and ability to teach
- When teachers had professional development and used the SMART Board interactive whiteboard, their students' engagement in the learning process increased
- Students' attention and engagement improved when the SMART Board interactive whiteboard was combined with a classroom audio system

Read the SMART summary of the interim report at smarttech.com/UNB_interim.

Read the SMART summary of the final report at smarttech.com/UNB_SMARTReport.

Read the University of New Brunswick final report at smarttech.com/UNB_final.

2004 Report: ICT in schools – the impact of government initiatives – Office for Standards in Education (2004)

This report is part of a series compiled by the UK Office for Standards in Education. It focuses on the impact of information and communication technology (ICT) government initiatives in primary schools.

Key findings

- Interactive whiteboards often enhanced the quality of teaching and learning
- Interactive whiteboards' power and versatility helped produce excellent lessons when used by effective teachers

Read more at smarttech.com/ICT2004.

Analysis of 2004 MAP Results for eMINTS Students – MOREnet and Missouri Department of Elementary and Secondary Education (2004)

The Missouri Research and Education Network (MOREnet) and the Missouri Department of Elementary and Secondary Education included SMART Board interactive whiteboards in the technology package that schools in the eMINTS program received. The following key findings are from the 2004 report analyzing the impact of the program on student learning and achievement. Reports are available for 2001 to 2004.

Key findings

- Students registered in the eMINTS program achieved higher Missouri Assessment Program scores than those not registered in the program
- eMINTS enrolment reduced the achievement gap for special education students, African American students and students receiving Title I services

Read more at smarttech.com/eMINTS2004.

Student Engagement, Visual Learning and Technology: Can Interactive Whiteboards Help? – William D. Beeland, Jr. (2002)

This research report, hosted on the Valdosta State University website, analyzes the attitudes of middle school students and teachers toward interactive whiteboards.

The action research study was conducted by giving surveys and questionnaires to 10 teachers and 197 students.

Key findings

- Students and teachers strongly preferred to use interactive whiteboards in the classroom
- Using interactive whiteboards led to increased student engagement, primarily because of the visual aspects of the interactive whiteboards

Read more at smarttech.com/Beeland.

Motivation and satisfaction

The Motivational Effect of ICT on Pupils – Lancaster University (2004)

This report from Lancaster University's Department of Educational Research analyzes the impact of ICT on student motivation. The study considered how teachers can enhance student motivation, especially for those who are disaffected with traditional forms of learning.

Key findings

- Interactive whiteboards, along with Internet resources and presentation software, facilitated improvement in the quality of student work
- Teachers and students reported they were motivated by interactive whiteboards, when used effectively

Read more at smarttech.com/Lancaster.

Student Perceptions of the Use and Educational Value of Technology at the STCC Starr County Campus: Implications for Technology Planning – South Texas Community College, Starr County Campus (2001)

This report presents the findings of a survey of 609 high school students in Texas. The survey measured the amount of use and perceived value of seven types of educational technology, including the SMART Board interactive whiteboard.

Key findings

- Interactive whiteboards helped student learning "a little" or "a lot" according to 92 percent of students, the joint highest percentage of all the types of technology studied

Read more at smarttech.com/STCC.

Mathematics and science

SMART Interactive White Board Utilization in Al-Shifaa Bint Ouf School – Jordan Education Initiative (2010)

This study examines the ways SMART Board interactive whiteboards have been integrated into the teaching strategies of educators and the learning experiences of eighth- and ninth-grade students, focusing on the subjects of mathematics and science.

Key findings

- Of students who participated in the study, 91 percent were more interested in learning when the SMART Board interactive whiteboard was used, 86 percent agreed that using a SMART Board interactive whiteboard motivated them to participate, and 71 percent stated that they waited impatiently for the class that used a SMART Board interactive whiteboard

- Teachers and students reported that the SMART Board interactive whiteboard had a strong impact on the revitalization of their classrooms
- Both of the teachers who used an interactive whiteboard for two years progressed in their use of it, as compared to other teachers who were in their first year of using the interactive whiteboard
- Support of the administration and a focus on collaborative learning helped strengthen teachers' adoption of the SMART Board interactive whiteboard over the years of implementation

Read more at smarttech.com/Jordan.

The Value of Interactive Whiteboard Technology in Supporting Teacher Practice and Student Mathematics Achievement – Toronto District School Board, SMART Board interactive whiteboard project (2007–09)

Researchers involved in this project tracked student achievement in math at 11 inner-city elementary schools in the Toronto District School Board. These schools all use SMART Board interactive whiteboards and SMART Notebook software in daily instruction. One aim of the study was to create a learning community that helped teachers develop the expertise to use interactive whiteboards to support and enrich the teaching of the elementary mathematics curriculum.

Key findings

- Schools showed a substantial increase in math achievement, as measured by the Educational Quality Assessment of Ontario scores at the third and sixth grade

Read more at smarttech.com/TDSB.

Evaluation of the Primary Schools Whiteboard Expansion Project – British Educational Communications and Technology Agency (Becta) (2007)

A report commissioned by Becta and written by the Education and Social Research Institute at Manchester Metropolitan University, a highly ranked research facility, proves that increasing students' exposure to interactive whiteboards through curriculum integration has a significant and positive impact on student achievement, especially in mathematics and science.

Key findings

- Students of both sexes who were considered average or high achievers made greater progress in mathematics with more exposure to interactive whiteboards
- Boys who were low achievers in science made seven-and-a-half months of additional progress when they had two years of exposure to interactive whiteboards as compared to no exposure

Read the executive summary from Becta at smarttech.com/Becta2007.

Read the SMART research bulletin at smarttech.com/Becta_SMART_Summary.

Enhancing Biology Instruction via Multimedia Presentations – Rhonda LeDuff (2004)

This paper examines how using the Internet, interactive whiteboards and software can improve the quality of learning in a biology classroom. LeDuff focuses on how using technology products in the classroom can help motivate students, increase their achievement and bring about greater interaction with subject matter.

Key points

- Using interactive whiteboards can increase students' participation and responsibility for learning

- Students are more attentive and willing to participate when lessons are taught using an interactive whiteboard
- Visual presentations and virtual dissections engage students when they can manipulate multimedia material on an interactive whiteboard
- Involving students in lessons by allowing them to manipulate content on an interactive whiteboard helps them take control of the pace of their learning

Read more at smarttech.com/LeDuff.

Enhancing Native American Mathematics Learning: The Use of Smartboard-generated Virtual Manipulatives for Conceptual Understanding – Frank Zittle (2004)

This paper by Frank Zittle, Vice President and Director of Research for the Center for Educational Evaluation and Research, focuses on the achievements of Navajo elementary students participating in a multimedia-enhanced geometry lesson. His findings suggest that Native American learners may benefit from the highly manipulative, visual environment that is offered by the SMART Board interactive whiteboard, especially when the teacher encourages collaboration and reflection, and the lesson lends itself well to manipulatives.

Key findings

- Navajo elementary students whose teachers used a SMART Board interactive whiteboard tended to show greater pre-test to post-test mathematics gains than students whose teachers did not use the SMART Board interactive whiteboard

Read more at smarttech.com/Zittle.

Developing the language used in geometrical reasoning using Cabri and an interactive whiteboard – Nicola Cologne-Brookes (2004)

In this Teachernet Best Practice Research Scholarships paper, Brookes reports how an interactive whiteboard and Cabri® software were used in year eight to teach mathematical language, with particular emphasis on parallel lines, transversals and geometric proof.

Key findings

- Use of an interactive whiteboard stimulated discussion and acted as a powerful visual aid in the teaching of geometric reasoning

Read more at smarttech.com/Cologne_Brookes.

Literacy and language

Teaching Emerging Literacy Skills: Using Touch Screen Technology and Reading Recovery Inspired Methods – Toronto District School Board, Sympodium™ interactive pen display project (2008–09)

This report explores how the Sympodium (now known as SMART Podium™) interactive pen display and SMART Notebook software have an impact on the literacy skills and achievement of at-risk students.

Research focus

- Teaching and learning in 1:1 instructional settings
- How the Sympodium interactive pen display can enable students and teachers to engage in assisted, shared literacy activities

Read more at smarttech.com/TDSB_Podium.

The Digital Whiteboard as a Tool in Increasing Student Attention During Early Literacy Instruction – Pamela A. Solvie (2001)

This report originally appeared in the International Reading Association's journal, *The Reading Teacher*. Solvie, an instructor at the University of Minnesota, Morris, investigates the effectiveness of using an interactive whiteboard to teach reading.

Key findings

- Using an interactive whiteboard to teach early literacy skills helped educators reach young children in positive and powerful ways
- Students were engaged by being able to draw on illustrations and to underline, circle or highlight text found on the Internet. It helped them create meaning, make connections and develop understanding.
- The interactive whiteboard involved students kinesthetically as they used pens or their hands to respond to text

Read more at smarttech.com/Solvie.

A SMARTer Way to Teach Foreign Language: The SMART Board Interactive Whiteboard as a Language Learning Tool – Fabienne Gérard and Jamey Widener (1999)

This research report by Gérard and Widener, formerly of Cary Academy in Cary, North Carolina, assesses the SMART Board interactive whiteboard and measures its positive impact in foreign language classrooms.

Key findings

- SMART Board interactive whiteboards offered innovative and powerful support for language acquisition
- SMART Board interactive whiteboards enabled teachers and students to use technology while supporting communication

Read more at smarttech.com/Gerard_Widener.

Pedagogy

Integrating Technologies for Teaching and Learning – University of Victoria (2009–11)

This ongoing project is examining how SMART products are adopted and integrated for teaching and learning. Specific research designs, procedures and instrumentation will emerge through the researchers' collaborations with participating in-service and pre-service teachers.

Research focus

- The effectiveness of SMART products and student-centered learning in distance learning environments
- How SMART products can be used to support self-regulated learning
- The issues to consider when incorporating SMART products across a variety of instructional contexts, including small classrooms, large lecture halls, fixed computer lab environments and mobile laptop computer lab environments

Read the interim report at smarttech.com/UVIC_Interim.

The final report will be released in June 2011.

Special education

The ICT Impact Report: A review of studies of ICT impact on schools in Europe – European Schoolnet (2006)

This report examines the results of 17 studies on the impact of ICT on student achievement. These studies were produced in the UK and other European countries between 2002 and 2006.

Key findings

- Interactive whiteboard use improved student performance in national tests in English, math and science, compared to student performance in classes without interactive whiteboards
- Interactive whiteboard use improved student engagement and motivation
- When interactive whiteboards were used, student participation in the classroom was greater
- Using an interactive whiteboard led to a faster pace of instruction

Read more at smarttech.com/ICT_Schoolnet2006.

The use of interactive whiteboards and touch screens by pupils who have profound and multiple learning difficulties – Sean O’Sullivan, Park Road ICT (2004)

This research report examines how two different types of touch-sensitive technology (personal and collaborative) affect how actively students with profound and multiple learning difficulties (PMLD) participate in ICT tasks. The dissertation was completed for Anglia Polytechnic University through Ultralab, and the research was carried out in collaboration with Frank Wise School in Banbury, UK.

Key findings

- Both interactive whiteboards and desktop computers with touch screens increased the engagement of students with PMLD
- Interactive whiteboards showed the potential for improving the engagement of students with gross motor difficulties

Find out more at smarttech.com/Park_Road.

The Effects of the SMART Board Interactive Whiteboard on High School Students with Special Needs in a Functional Mathematics Class – Meredith Zirkle (2003)

Meredith Zirkle, who received her master of education degree from Eastern Mennonite University in Harrisonburg, Virginia, is a math teacher at Spotswood High School in Virginia. She analyzes the SMART Board interactive whiteboard’s effect on the achievement of 11 students with special needs in a functional mathematics class.

Key findings

- The SMART Board interactive whiteboard was a positive tool for assisting in the math achievement of special needs students in a functional math class

Read more at smarttech.com/Zirkle.

Additional resources

CLIENT

CLIENT is a communication and information technology unit dedicated to research, development and publication in the UK. It is run by Georgina Stein of Canterbury Christ Church University College in Kent. CLIENT conducts research for several top government agencies, such as the Department of Education and Skills, and smaller public and private sector organizations.

CLIENT's interactive whiteboard research reports and case studies are accessible at canterbury.ac.uk/education/departments/client.

SMART research library

The research projects included in the SMART research library cover a diverse range of subjects, such as specific learning needs and styles, professional development issues, educational software and classroom dynamics. The projects are teacher-led and focus on how students learn and interact in K–12 and higher education classrooms.

Visit the library to see the research projects, listed alphabetically and by subject, at smarttech.com/us/Resources/Research+and+data/Research+Library.